Ch 2.53

R34151

Digitized by the Internet Archive
in 2015

https://archive.org/details/b21700539

THE

CLINIQUE MÉDICALE;

OR

REPORTS OF MEDICAL CASES:

By G. ANDRAL,

PROFESSOR TO THE FACULTY OF MEDICINE OF PARIS, MEMBER OF THE ROYAL ACADEMY OF MEDICINE,
&c. &c.

CONDENSED AND TRANSLATED,

WITH OBSERVATIONS EXTRACTED FROM THE WRITINGS OF THE MOST DISTINGUISHED MEDICAL AUTHORS:

By D. SPILLAN, M.D.

FELLOW OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND, MEMBER OF THE ASSOCIATION OF
THE FELLOWS AND LICENTIATES OF THE COLLEGE OF PHYSICIANS, AND FORMERLY
PHYSICIAN TO THE DUBLIN GENERAL DISPENSARY.

> Nulla est alia pro certo noscendi via, nisi quâm plurimas et morborum et dissectionum historias, tum aliorum, tum proprias, collectas habere, et inter se comparare.
>
> MORGAGNI, de Sedib. et Caus. Morb., lib. iv., proem.

LONDON:
HENRY RENSHAW, MEDICAL BOOKSELLER AND PUBLISHER,
356, STRAND.

MDCCCXXXVI.

LONDON:
BRADBURY AND EVANS, PRINTERS,
WHITEFRIARS.

G. ANDRAL,

FACULTATIS MEDICINÆ PARISIENSIS PROFESSORI,
LEGIONIS HONORIS EQUITI,

&c. &c. &c. &c. &c.

SUMMUM SUMMO OMNIUM CONSENSU LOCUM

INTER PATHOLOGOS

HUJUSCE SÆCULI SORTITO, QUIPPE CUI ARS MEDENDI TANTUM REFERT

ACCEPTUM QUANTUM INTER VIVOS NEMINI

HANC CELEBERRIMI EJUS OPERIS

IN LINGUAM ANGLICAM VERSIONEM DEDICAT

D. SPILLAN.

Londini,
Kalend. Oct. 1836.

INTRODUCTION.

BY THE TRANSLATOR.

THE importance of the study of clinical medicine is now so universally acknowledged, that it appears altogether unnecessary to occupy the reader's time or attention by pointing out to him its various and manifold advantages.

This study may be considered as the complement of Medical Education, it being neither more nor less than the application of all other branches of the healing art to that which is their ultimate end and aim, namely, the prevention, alleviation, and cure of diseases. In order thoroughly to understand a disease, it is absolutely necessary to have seen it, to have carefully watched it, and traced it through its different stages during life, and to note the vestiges which it may have left behind after death. After this method of studying disease, which we hold to be absolutely indispensable, accurate descriptions of disease coming from men on whose judgment, attainments, and experience reliance may be placed, hold the next rank: good descriptions of disease teach us the art of observing for ourselves, they correct our errors, and direct our attention to objects which might otherwise have escaped us. These descriptions, when consulted after we have devoted ourselves for some time to clinical observation, engrave the phenomena which we have witnessed more deeply in our memory. Again, however, we would impress it on the student's mind they never can be substituted for the actual observation of disease at the bed-side. In order to become sound physicians, nature herself must be interrogated—that is *the* book which must be attentively perused.

For the purpose of assisting more particularly the junior student in his clinical studies, we shall offer a few observations, principally in reference to the important subject of diagnosis, the method of examining a patient, and the more striking phenomena of semeiology.

By *Diagnosis* is understood the knowledge of those characters which serve to distinguish diseases from one another. The exact appreciation of the several organic alterations, of the symptoms, and of the local and general signs to which these alterations give rise, chiefly constitutes diagnosis. This, whilst it is one of the most important branches of pathology, and without doubt one of the most difficult, is also the only basis on which we can found a just prognosis and rational treatment.

To assist in forming the diagnosis, several methods are occasionally employed. The first, and certainly the most simple, consists in directly referring the symptoms observed to the lesion of that organ or tissue which those symptoms seem to point out as the seat of suffering. Thus, when a patient presents himself with difficulty of breathing, cough, deep-seated pain, dulness of sound, and crepitous râle on one side of the chest, sputa streaked with blood, etc., we at once pronounce the lung to be the seat of the disease. If the patient should die, the post mortem examination confirms this part of the diagnosis, and completes it by disclosing the nature of the lesion. If the patient survive, as identical symptoms cannot depend on different lesions, and post mortem examination has shown, under similar circumstances, that the above mentioned symptoms invariably accompany such a lesion of the lung, the diagnosis still has all the certainty that can be desired.

Another method applies to cases in which the symptoms being slight are not easily interpreted; when the differences are not easily appreciated between those which arise directly from the organ affected, and those which are merely sympathetic; this includes the greater number of chronic diseases. This method consists in interrogating all the organs one after another, until we come to that which accounts sufficiently for all the symptoms observed. Here we commence by a rapid examination of the parts contained in the head, chest, and abdomen; and in this first review we exclude all those organs and tissues of whose healthy condition we entertain no doubt, and we note all those which we at all suspect to be the seat of any lesion. This first process being concluded, we proceed to a second examination, which is directed solely to the tissues or organs suspected. We then make a new selection among these, or, more properly speaking, we again exclude; this exclusion affects those whose suffering is evidently merely sympathetic, still reserving those of which we have any doubt for a still stricter examination. Lastly, in a third process we remove successively all those tissues, the lesion of which does not account sufficiently for all the symptoms observed, and thus we come to the real seat of the disease; should there be any difficulty then in deciding between two organs, it is more than probable that there is a simultaneous lesion of both.

In the practice of Medicine a correct diagnosis necessarily leads to a rational treatment—in order to form such a diagnosis, it is necessary to know the organs and functions in their normal state; without this knowledge we cannot appreciate the changes induced by disease. Anatomy and Physiology are, therefore, preliminary and indispensable.

By the *symptom* of a disease is meant an alteration of some parts of the body, or of some of its functions, produced by a morbific cause, and perceptible to the senses. From the alteration of the function we infer an alteration in the organ to which the discharge of such function was confided. When we have ascertained what organ is the seat of lesion, and what the nature of the lesion is, the symptom is converted into a sign. The senses alone are sufficient to make us perceive the symptoms; persons wholly unacquainted with medicine may ascertain them. There is no one, for instance, who cannot perceive what a pain of the side is, with dyspnœa, hæmoptysis, &c.; it is only the physician who can tell what these symptoms signify; i. e. can convert them into signs.

The study of mere symptoms, without endeavouring to ascertain the signification of these symptoms, has been at all times productive of much mischief in the treatment of disease. Not long since, medical men, destitute of the light of pathological anatomy, considered mere groups of symptoms as diseases, against which they directed their therapeutic agents. This method, even at the present time, finds many staunch abettors. To illustrate the absurdity of this method, we shall suppose a case of paralysis. A little time ago it was not known, and several seem not yet to know, that paralysis is but a symptom of an alteration in the brain or its appendages. Pathological anatomy has proved this point beyond all doubt. Well! what was the practice adopted in paralysis? Frictions and rubefacients were employed to restore sensation to the paralysed limb. So far, if no good was done, no injury resulted from the practice. But some one took it into his head to give nux vomica to an animal; the hind parts of the animal were observed to be convulsed after the employment of this drug; it was thence inferred that the medicine would perform wonders in paraplegia. It was afterwards given in cases of hemiplegia, and was observed to produce convulsions in the paralysed limbs, and forthwith it was expected that it would restore motion to these limbs. Had physicians known that paralysis was but a symptom of an acute or chronic local affection of the brain, they would have seen that the means proposed to give motion to the paralysed limbs, must necessarily act on the diseased portion of the encephalon; and in thus causing the diseased part to act, they rather prevented than promoted its cure. They would have seen, that to make the limbs perform motion in this case, was just the same as rubbing the two ends of a fractured bone one against the other, by way of consolidating the fracture. Numerous other instances might be adduced of the absurdity and mischief resulting from confining attention exclusively to the symptoms.

MODE OF INTERROGATING A PATIENT.

Nothing is more embarrassing to a young and inexperienced physician than the office of examining a patient. It is beyond all doubt one of the most important parts of his profession, one without which he cannot attain a sure diagnosis, and consequently cannot adopt a rational mode of treatment, This is, however, a branch too much neglected in the education of medical men. There is often great incoherence and confusion observable in their questions. These questions are frequently totally mal-apropos, and devoid of all connection; such persons oftentimes confound objects the most dissimilar, and keep separate those that bear the strongest resemblances. These disadvantages arise from a want of order and method. The mode of taking a case, as it is closely connected with that of examining a patient, participates in all the above defects in the hands of the inexperienced.

The first thing that should be done is, to examine the exterior—the physiognomy first should engage our attention; by this we obtain some idea of the patient's age and strength, state of his mind, circumstances of prime importance in establishing our prognosis and mode of treatment. This first examination should not be confined to the head; the physician should extend his examination to all the regions of the body, in order that he may be able to judge of the form of the body, its size, colour, eruptions, if there should be any. Such examination should be made, where it can be done with convenience. The necessity of minutely examining the exterior of the body, more particularly in the part which may be the seat of pain, has been very well pointed out by M. Rostan, in the following case:—An aged woman was admitted into the hospital under his care: she complained of an acute pain in the abdomen, towards the left iliac fossa. Face flushed, skin hot, pulse strong and frequent; tongue dry, considerable thirst; digestive functions natural, little or no change in the other organic or animal functions. The abdominal pain was very sensible on pressure, and when she moved. His diagnosis was as follows: the phenomena of reaction, (strength and frequency of pulse, flushed face, thirst, &c.) indicated an acute state, and one, no doubt, of an inflammatory character. The local sign showed, that the abdomen was the seat of the disease; but the digestive functions were natural, so that it was not in the digestive organs that the inflammation was seated. The slightest pressure gave pain, which showed that the disease was superficial. Motion was painful, the organ of motion was therefore affected; *the abdominal muscles therefore must be the seat of disease.* After forming this diagnosis, he prescribed for the patient accordingly, and then left her, when one of the pupils who had raised the patient's chemise for the purpose of examining the seat of pain, followed him, and informed him that it was a case of zona. This lesson made us feel more than ever says, M. Rostan, the necessity of using our senses, the only means of positive instruction. Another case is mentioned by the same author in proof of the same theory. A patient had fallen on a pointed body, and felt considerable pain in the left side of the chest; there was cough, accompanied with great pain; some expectoration, sputa streaked with blood, and symptoms of well-marked reaction. The pain was very acute to the touch. One of the pupils examined the patient, and formed his diagnosis thus: the cough and spitting of blood prove that the respiratory organs, and probably the lungs, must be the seat of the disease. The very acute pain of the side, which was increased both by pressure and by respiration, might be, to be sure in the thoracic parietes; but the strength and frequency of the pulse, the redness of the face, the heat of skin, thirst, &c. indicated a more deep-seated lesion, (percussion could not be employed on account of the acuteness of the pain; a crepitous râle was detected by the stethoscope). The pupil's diagnosis was *pleuro-pneumonia.* This certainly was reasoning from very correct principles; but what was the real state of the patient? There was *a fracture of the ribs.* Had the state of the exterior been examined, this error would have been avoided.

The first question to be addressed to a patient should be—"Where have you any pain?" This question, simple as it may appear, is far the best. Patients are very much disposed to give an opinion on the nature of their own case. One will tell you that it is his nerves that are affected; another, that he is troubled with the bile. If, instead of putting the question as is above recommended, the physician were to ask the patient—"What ails you?" he may be sure to receive an answer that will leave him as much in the dark with respect to the nature of the patient's disease as he was before he put the question; whereas, by asking him where his ailment lies, the patient seldom fails to point out the function and organ diseased. Even with this precision in conducting our examination, it is oftentimes difficult to prevent patients from wandering into rigmarole accounts concerning their complaints; frequently, too, they take one organ for another; they, for instance, complain of a pain in the stomach, when the seat of disease is in the chest. It is useful, in order to avoid all misunderstanding, to bid them lay their hand on the part where they feel pain. The next question should be—"How long are you ailing in this way?" By this you ascertain whether the disease be acute or chronic. If we discover that the disease is of recent occurrence, we then confine our attention solely to the consideration of acute diseases, excluding altogether chronic diseases of the same organ. We shall take an example for the sake of illustration. The acute diseases of the brain are:—congestion, inflammation of the membranes, that of the cerebral substance, hemorrhage, ramollissement. The chronic diseases are :—tubercles, cancer, acephalocysts, osseous tumours of the parietes of the cranium, fungus of the dura mater, general affections of this organ, such as hysteria, epilepsy, &c. &c. Well, if the disease is only of a few days' standing, we shall conclude that it is acute, and shall lay aside all those now enumerated in the chronic list; we shall then confine our attention to congestion, meningitis, encephalitis, apoplexy, &c., the diagnostic signs of which we shall soon ascertain.

Now, when we know what the function is that has been injured, we must follow up its examination, until we have passed in review all the morbid phenomena which it may present. When this examination is completed, we pass on to the function or organ which exercises the most marked influence over that which has been just examined, or which receives the most marked influence from it. We then pass in review, one after another, all the principal organs and their general functions. Whenever an organ is seriously affected, it reacts on the other organs, disturbs their functions, and sometimes their structure. How are we to discover these consecutive alterations, unless by examining all the organs and all their functions?

When we have examined the patient in the manner now described, we next endeavour to ascertain the state of the different organs contained in the thoracic and abdominal cavities, by means of *percussion* and *auscultation.* For a description of the mode of practising these instruments of clinical investigation, we must refer to the works expressly written on these subjects.

There are several circumstances which may prevent the physician from examining his patient in the manner now described. He will then be obliged to have recourse to the statements of those in attendance on the patient; he must make use of his own senses; the sense of sight will make known to him all the phenomena regarding the external appearance of the patient; by touch he can discover the temperature, consistence, and sensibility of most of the superficial and deep-seated parts, the state of the circulation, &c; by his ear he can ascertain all the various sounds produced by percussion, or discoverable by the stethoscope. We shall cite an example, to show that the difficulty of ascertaining the seat and nature of a disease, even in cases wherein serious obstacles may present themselves, is not so great as may appear at first sight. Let us suppose an example:—

A patient is presented to us in a state of complete loss of consciousness. It is altogether impossible to obtain from him any information with respect to his present feelings, or the previous history of the case. We merely learn from his friends, and those around him, that, up to the period of his illness, he was in the enjoyment of perfect health, and that the present attack was sudden. Having no other sources of information as to the nature of the case, we call in our senses and reason to our aid. The former tell us that the patient may be about sixty years of age; that he is of a strong make; that the several cavities are large, and his limbs well developed; that his face is flushed; that the eyes are prominent, and that the temporal and carotid arteries beat with violence; that he is frothing at the mouth; that the extremities are cold; that one side of the body is deprived of motion; that the pulse is strong and hard; that he has vomited, and that he has passed his fæces involuntarily; that the breathing is stertorous. What is to be done in this case? Do we not see, in a moment, what the disease is, its nature, seat, extent, and the indications of treatment? Let us now reason on the case. There is complete loss of consciousness. What are the diseases which gave rise to this symptom? Diseases of the heart, of the lung, and of the brain. Is the heart the seat of the disease at present? No; for the patient was very well before the present attack, and the circulation was not disturbed. Is it syncope? No; for the face is flushed, and the pulse is strong and full. Is it asphyxia? No; for the respiration and circulation still exist, and there was no asphyxiating cause. The brain, therefore, must be the organ involved. We have now placed the disease in the brain, but the diseases of this organ are numerous. The disease is evidently not chronic, for the patient was very well a little before the attack. Thus, then, by this single trait, we have got rid of one half the cerebral affections. We now have left for consideration arachnitis, cerebral congestion, softening, and hemorrhage; it cannot be congestion, for congestion is a general disease, and here there are local phenomena: nor can it be arachnitis, for the same reason. It must, therefore, be either softening or effusion; but the progress of softening, which also produces hemiplegia is slow and gradual, and here the disease comes on suddenly. The case, therefore, must be one of a cerebral hemorrhage, or apoplexy. Thus, then, have we come, by the mere application of the senses, and by reasoning, to ascertain the nature, seat, and extent of the disease which we have before our eyes, and that with almost mathematical certainty.

After examining the patient in this way, it next remains for us to go back to the previous circumstances which might have acted as causes, or which might furnish some useful data for the treatment. We should inquire to what cause the patient attributes his disease; whether the disease be hereditary or acquired; whether the present is the first attack of it, or whether it appeared on a former occasion. Lastly, we should direct attention to the age, sex, constitution, idiosyncrasy, habits, and profession of the patient.

When the disease terminates fatally, the task of the clinical observer is not yet finished. This is the moment when nature will either confirm the accuracy of his diagnosis, or prove its incorrectness. The autopsy requires the same attention from the physician as the examination of the patient did before death.

As the same method of examination may not always apply in all cases, we shall, for the benefit of the junior student, annex the plan of examination recommended by M. Louis; it is as follows:

Before the clinical student inquires into the symptoms in any case, he should inquire into the *age* and *profession* of the patient; into his *usual state of embonpoint* or *emaciation*, of *strength* or *weakness*, of *health* or *disease;* of the *affections* under which he laboured before the present; of the *natural conformation* of his body.

The reasons for these inquiries are obvious.

When these points are ascertained, we should next proceed to ascertain the period when the disease commenced; as, without knowing this, we could not learn with certainty its progress and duration, nor should we have all the elements of the prognosis and treatment. It should be ascertained whether, before the time at which the patient states his disease commenced, he was in perfect health, whether all the functions were duly performed: a strict inquiry into this particular is indispensable among persons in the humbler walks of life, since they generally date the commencement of their disease from the time at which they were forced to give up their ordinary occupations. By way of illustrating the necessity of this inquiry, let us suppose a case of pleuritis, the first symptoms of which commenced only a few days before the patient came under the examination of the physician; let us suppose that the patient states that he was in perfect health before this pleuritic attack; here the prognosis will of course be favourable, as experience shows us that pleuritis, attacking a person previously in good health, almost always terminates well. But, if we ascertain by our inquiries that the patient, long before the pleuritic attack, was harassed with a cough; if we find, moreover, that this cough is connected with tubercles in the lungs, the prognosis and treatment will be seriously modified.

Having ascertained the time when the disease commenced, we then come to the *consideration of the symptoms*. These should be studied one by one in the exact order in which they appeared from the commencement of the disease to the period when the patient comes under our examination.

Pathological Anatomy should now be brought in to assist the other methods of examination. The use of pathological anatomy is not only to discover the seat of diseases, to develop their nature, and unravel their complications; by it also we arrive at a knowledge of many of the laws observed by disease, knowledge which can only be obtained from an attentive examination of all the organs, whenever the patient has died of the disease. We now know, for instance, that, after the age of fifteen, whenever we find tubercles in any organ, we are sure they also exist at the same time in the lungs. It is evidently to pathological anatomy we are indebted for our knowledge of this law.

Having now ascertained the state of the functions, and learned the symptoms which have occurred from the commencement of the disease up to the period at which the patient came under our inspection, we must next endeavour to ascertain the value of those symptoms, we must convert these symptoms into *signs*, in order to arrive at the knowledge of the organ affected, and of its pathological state. This becomes the more necessary, as there are cases in which the symptoms do not, either at the commencement of the disease, or during a considerable portion of its progress, indicate an appreciable alteration of any organ whatever. This conversion of symptoms into signs is to be accomplished by carefully noting the exact series and precise connection of these symptoms; the method of exclusion, or remotion, also is sometimes to be employed; that is to say, we attain a knowledge of the organ affected, not so much from any serious disturbance of its peculiar functions, as because whilst the other viscera gave no sign of any appreciable alteration, that viscus alone should be considered as the seat of the disease whose functions are in any way altered, even though such alteration may not be very marked.

Having now ascertained the organ affected, our next object is, to learn the *nature of the disease*, of which it is the seat. The difficulty of solving this question is not inconsiderable; this difficulty is in a great measure occasioned by the want of anatomical examinations, carefully conducted at different periods of the same disease. It is chiefly by the aid of pathological anatomy, by comparing the symptoms with the lesions corresponding to them, that this question can be solved.

When we have now ascertained the symptoms of the disease, the organ which is its seat, the nature of the disease, and its probable duration, the *prognosis* presents itself to our consideration. In forming the prognosis we must, in addition to the above data, take into consideration the degree of fever present, the age and strength of the patient*.

---

* For much valuable information on the subject of Clinical instruction, we refer the student to Dr. Latham's "Lectures on Subjects connected with Clinical Medicine."

CONTENTS OF PART I.

FIRST BOOK.

DISEASES OF THE ENCEPHALIC MEMBRANES.

PAGE.
Section I.—Diseases of the Dura Mater 1

Section II.—Diseases of the Arachnoid and Pia Mater . . . 3
Chap. I.—Cases of Diseases of the Arachnoid and Pia Mater covering the upper surface of the Brain 4
Chap. II.—Diseases of the Meninges of the lower surface of the Brain 16
Chap. III.—Diseases of the Meninges covering the parietes of the Ventricles of the Brain 18
Chap. IV.—Cases wherein the entire of the Meninges were involved . 25
Chap. V.—Diseases of the Membranes of the Spinal Cord . . 30

Recapitulation—Chap. I. Lesions detected in the Meninges by post mortem examination.
Art. 1.—Lesions of the Dura Mater 39
Art. 2.—Lesions of the Arachnoid 40
Art. 3.—Lesions of the Pia Mater 41
Chap. II.—Disturbances of Function 45
Art. 1.—Disturbances in the Functions of Relative Life . . ib.

Section I.—Lesions of Sensibility . . . . . . ib.
Art. 2.—Lesions of Motion 50
Art. 3.—Lesions of Intelligence 56
Chap. III.—Disturbances of the Functions of the Organs of Nutritive Life.
Art. 1.—Lesions of the Functions of the Digestive Apparatus . 59
Art. 2.—Lesions of the Circulation 61
Art. 3.—Lesions of the Respiration 63

Supplement.—Spinal Meningitis . . . . . . ib.
Symptoms of Meningitis 65

SECOND BOOK.

DISEASES OF THE BRAIN.

PAGE
FIRST ORDER—Cerebral Congestions 67
RECAPITULATION 73
SECOND ORDER—Cerebral Hemorrhage 93
RECAPITULATION—Chap. I. Lesions of Motion 107
Chap. II. Lesions of Sensibility . . . 113
Chap. III. Lesions of Intelligence . . . 117
Chap. IV. Lesions of the Functions of the Organs of Nutritive Life . . . 119

SUPPLEMENT—Spinal Congestions 121
THIRD ORDER—Softening of the Cerebral Hemipheres . . 132
Chap. I.—Cases where no Symptom announced the Softening . . 133
Chap. II.—Cases where the Disturbance of Motion was the only symptom 134
Chap. III.—Cases where, with different Lesions of Motion, there existed a Lesion of Sensibility 144
Chap. IV.—Cases in which the Loss of Speech was the only symptom, or one of the predominant Symptoms . . . 148
Chap. V.—Cases in which, with divers Disturbances of Motion and Sensation, there was Disturbance of the Intelligence . . 149
Art. 1.—Softening of the Brain, with complete and sudden Loss of Consciousness . . . . . . ib.
Art. 2.—Softening of the Brain, with Weakness or Perversion of the Intelligence 154
RECAPITULATION 159
FOURTH ORDER—Hypertrophy of the Cerebral Hemispheres . . 174

THIRD BOOK.

DISEASES OF THE CEREBELLUM.

SECTION I.—Observations on Hemorrhage of the Cerebellum . . 194
SECTION II.—Observations on softening of the Cerebellum . . . 195

NOTE.—The translator begs leave to state that the *Supplement*, which has been condensed from Ollivier's work on Diseases of the Spinal Cord, as also all the Notes—except those at pages 44, 60, 85, 94, 165, and 168—have been added to the present Translation by himself, he feels it necessary to apprise his readers of this circumstance, in consequence of having neglected to subjoin his signature (T. or TR.) to the several additions, particularly in the early pages of the work.

CONTENTS OF PART II.

FIRST BOOK.

DISEASES OF THE HEART.

PAGE

Section I.—Observations on Diseases of the Pericardium . . 217

Chap. I.—Acute Pericarditis 218

Art. I.—Cases of acute Pericarditis with characteristic Symptoms . ib.

Case 1.—Acute articular Rheumatism—Suddenly a sharp Pain in the Region of the Heart—Speedy Death—Purulent Exudation on the internal Surface of the Pericardium . . ib.

Case 2.—Pain at the lower Part of the Sternum, and in the Region of the Heart, becoming intense by degrees, succeeding articular Pains—Pulsations of the Heart obscure; Pulse strong and regular—False Membranes in the Pericardium . . 220

Case 3.—Pain in the Region of the Heart, radiating at intervals to the left Arm—Beatings of the Heart very strong at the outset, but subsequently very obscure; Pulse all through very small and regular—Sound dull in the precordial Region—Great Dyspnœa—Effusion of Blood into the Pericardium . 222

Case 4.—Symptoms of Pericarditis—Cure 224

Art. II.—Cases of acute Pericarditis without Pain, but with Dyspnœa . 225

Case 5.—Pulmonary Tubercles—Breathing very little embarrassed—All at once great Dyspnœa—Sudden Death—Purulent Effusion into the Pericardium . . . . ib.

Case 6.—Slight Asthma for several Years—All at once extreme Dyspnœa, the constant increase of which caused Death by Asphyxia—Serous Effusion into the Pericardium . . . ib.

Case 7.—Confluent Small Pox—Complication of Pericarditis, announced merely by great Dyspnœa 228

Art. III.—Cases of acute Pericarditis without any characteristic Symptom 229

Case 8.—Symptoms of Meningitis—Acute Inflammation of the Pericardium . . . . . . ib.

Chap. II.—Chronic Pericarditis 230

Case 9.—Very thick false Membranes around the Heart—Symptoms of Aneurism . . . . . . ib.

Case 10.—Very thick false Membranes around the Heart—Dropsy—Extreme frequency of Pulse—Pericarditis recognised during Life 232

PAGE
SECTION II.—Observations on Diseases of the fleshy Substance of the Heart and its internal Membrane 236
CHAP. I —Lesions which exist at the onset of Diseases of the Heart—Symptoms of these Lesions . . . . ib.
CHAP. II.—Lesions of Organs, or of Functions, resulting from the Disturbance which the arterial Circulation undergoes in Cases of Disease of the Heart 246
CHAP. III.—Lesion of Organs, or of Functions, which result from the Disturbance which the venous Circulation undergoes in Disease of the Heart 250
ART. 1.—Sanguineous Congestions 251
ART. 2.—Serous Congestions 264
ART. 3.—Lesions of the Heart discovered by Auscultation . . 279

SECOND BOOK.

DISEASES OF THE LUNG.

SECTION I.—Diseases of the Bronchi 285
CHAP. I.—Organic Alterations of the Bronchi in the state of Inflammation —Symptoms of these Alterations . . . . ib.
Case 1.—Chronic Bronchitis simulating Pulmonary Phthisis—Whiteness of the Tracheo-Bronchial Mucous Membrane . 287
Researches regarding the History of the Narrowing and Obliteration of the Bronchi 289
Case 2.—Chronic Bronchitis—Narrowing of the principal Bronchus of the upper Lobe of the right Lung—Almost entire Absence of the Respiratory Murmur in this Lobe . . 291
Case 3.—Chronic Bronchitis — Thickening of the Parietes of some Bronchi, with perceptible narrowing of their Cavity—Pulmonary Tubercles on the opposite Side . . . 292
Case 4.—Chronic Bronchitis—Compression of the large Bronchi of the right Lung by a mass of encysted Melanosis—Respiratory Murmur weaker on the right Side . . . 293
Case 5.—General Chronic Bronchitis—Dilatation of a single Bronchial Branch—Absence of characteristic Symptoms of this Dilatation—Cancer of the Stomach 294
Case 6.—Chronic Bronchitis, with Aneurism of the Heart—General Dilatation of the Bronchi of one Lobe—Peculiar Resonance of the Voice . . . . . ib.
Case 8.—Chronic Bronchitis—Dilatation of several Bronchi—Pectoriloquy 295
Case 9.—Partial Chronic Bronchitis—Dilatation of some Bronchial Branches—Mucous Râle in the corresponding Points—Cancer of the Liver 297
CHAP. II.—Alterations in the Secretion of the Bronchial Mucous Membrane 299
Case 10.—Chronic Bronchitis — Moist Bronchial Râle (Mucous and Crepitous Râle blended) over the entire Extent of the two Lungs . . . . . . ib.
Case 11.—Chronic Bronchitis—Obstruction of a Bronchus by Mucus—Death by Asphyxia 301

PAGE
Case 12.—Chronic Bronchitis with Melanosis—Obstruction of Bronchus by a mucous Concretion resembling a Polypus, increasing Dyspnœa, and Death 302
Case 13.—Chronic Bronchitis—Great Fetor of the Sputa—Melanosis of the Lung 305
Case 14.—Chronic Bronchitis — Abundant Expectoration—Death by Marasmus 306
Case 15.—Chronic Bronchitis—Abundant Expectoration—Lesion of the Pulmonary Parenchyma 307
Case 16.— 308
Case 17.—Acute Bronchial Flux producing Death by Asphyxia in an Individual affected with Pneumonia and Chronic Bronchitis . 310
Case 18.—Serous Flux of the Bronchi, the sudden appearance of which coincided with the Absorption of a Hydrothorax . . ib.
Case 19.—Acute Bronchitis—Measles—Premature Disappearance of the Eruption; fatal Dyspnœa 312
Case 20.—Slight Chronic Bronchitis—Suppression of the running of an old Ulcer; fatal Attack of Asthma . . . 314
Case 21.—Old Dyspnœa with Dropsy—Absence of Lesion to account for it, either in the Heart or Lungs—Alteration of the Diaphragmatic and Pneumo-gastric Nerves . . . 316

Section II.—Pleuro-pneumonia 318
Chap. I.—Pleuro-pneumonia announced by the aggregate of the characteristic Symptoms 319
Art. 1.—Pleuro-pneumonias in the first Degree. (Engorgement.) . ib.
Case 1.— . . . . ib.
Case 2.— 320
Case 3.— 321
Case 4.— 323
Art. 2.—Pleuro-pneumonias in the second degree. (Red Hepatisation.) 324
Case 5.— . . . . ib.
Case 6.— 327
Case 7.— 328
Case 8.— 330
Case 9.— 331
Case 10.— 332
Case 11.— 333
Case 12.— 334
Art. 3.—Pleuro-pneumonias in the third degree. (Grey Hepatisation.) 336
Case 13.— . . . . ib.
Case 14.— 337
Case 15.— 338
Case 16.— 340
Chap. II.—Pleuro-pneumonias with the Absence of one or more of their characteristic Symptoms 341
Art. 1.—Absence of the Signs furnished by Auscultation and Percussion ib.
Case 17.— 341
Case 18.— 342
Case 19.— 343
Case 20.— 344
Case 21.— 345
Case 22.— 346

PAGE
ART. 2.—Absence of the Signs furnished by Expectoration . . 347
Case 23.— 348
Case 24.— 349
Case 25.— 350
Case 26.— 351
Case 27.— . . . . ib.
Case 28.— 352
Case 29.— 354
Case 30.— . . . . . . ib.
ART. 3.—Simultaneous Absence of the Signs furnished by Auscultation, Percussion and Expectoration 355
Case 31.— . . . . . . ib.
CHAP. III.—Pleuro-pneumonias complicated with other Affections . 356
Case 32.—Chronic Bronchitis complicated with Pneumonia . . 357
Case 33.—Pulmonary Tubercles—Intercurring Pneumonia . . 358
Case 34.—Pulmonary Tubercles occasioning their softening . . 359
Case 35.—Pneumonia with Hydrothorax of the opposite Side, and Aneurism of the Heart 360
Case 36.—Pneumonia with Pulmonary Œdema and double pleuritic Effusion—Intermittent Fever at first . . . 361
Case 37.—Pneumonia with Pericarditis—Fibro-cartilaginous Tumours around the Heart 362
Case 38.—Pneumonia with Hepatitis 366
Case 39.—Pneumonia with general Inflammation of the Gastro-pulmonary Mucous Membrane 367
Case 40.—Double Pneumonia with Enteritis and acute Peritonitis . 369
Case 41.—Pneumonia at the commencement of Small Pox disappearing as the Eruption came out 370
CHAP. IV.—Termination of Pneumonia by Gangrene . . . 371
Case 42.— . . . . . ib.
Case 43.— 372
Case 44.— 375
CHAP. V.—Recapitulation, or General History of Pleuro-pneumonia . 377

BIBLIOTH.
COLL. REG.
MED. ED.

CONTENTS OF PART III.

DISEASES OF THE CHEST.

PAGE
SECTION III.—Observations on Pulmonary Phthisis . . . 413
CHAP. I.—Nature and seat of Pulmonary Tubercles . . . ib.
CHAP. II.—Symptoms of Pulmonary Phthisis . . . 424
ART. 1.—Symptoms which mark the onset of Pulmonary Phthisis . . ib.
ART. 2.—Symptoms which accompany Pulmonary Tubercles in the different stages of their existence . . . 438
§ 1.—Signs furnished by Percussion and Auscultation . . . 439
§ 2.—Signs furnished by the Respiration . . . 448
§ 3.—Signs afforded by the Cough 457
§ 4.—Signs afforded by the Expectoration . . . 461
§ 5.—Signs afforded by Hemoptysis 474
CHAP. III.—Diseases which complicate Pulmonary Tubercles . . 484
ART. 1.—Diseases which complicate Pulmonary Tubercles, and which are seated in the Respiratory Apparatus . . . 485
§ 1.—Diseases of the Larynx, Trachea, and Bronchi . . 486
§ 2.—Diseases of the Pulmonary Parenchyma . . . 497
§ 3.—Diseases of the Pleura 502
§ 4.—Diseases of the Bronchial Ganglions 506
ART. 2.—Diseases which complicate Pulmonary Tubercles, and which have their seat without the Respiratory Organs . . 511
§ 1.—Diseases of the Heart and its Appendages . . . ib.
§ 2.—Diseases of the Digestive Tube 513
§ 3.—Diseases of the Organs appended to the Digestive Apparatus . 534
§ 4.—Diseases of the Urinary Apparatus 537
§ 5.—Diseases of the Locomotive Apparatus 538
§ 6.—Diseases of the Nervous System . . . 540
§ 7.—Diseases of the Genital Organs 542
CHAP. IV.—Progress and duration of Pulmonary Tubercles . . ib.
CHAP. V.—Cicatrisation of Tuberculous Excavations of the Lung . . 547

Section IV.—Observations on different accidental productions developed in the Lung 552

Section V.—Observations on Pleuritis 556
Chap. I.—Pleurisies without effusion 558
Chap. II.—Pleuritis with effusion 559
Chap. III.—Partial Pleurisies 571
Art. 1.—Diaphragmatic Pleurisies 572
§ 1.—Isolated Diaphragmatic Pleurisies . . . ib.
§ 2.—Diaphragmatic Pleurisies co-existing with Costo-pulmonary Pleuritis 576
Art. 2.—Interlobular Pleurisies . . . 580
Art. 3.—Inflammation of the Median Pleura 581
Art. 4.—Partial Inflammation of the Costo-pulmonary Pleura . 582
Chap. IV.—Double Pleurisies with or without effusion . . . 584
Chap. V.—Pleurisies complicated with other diseases . . 587
Chap. VI—General history of Pleurisy 589

CONTENTS OF PART IV.

DISEASES OF THE ABDOMEN.

PAGE

Book I.—Diseases of the digestive tube 609

Section I.—Observation on fevers . . . . . ib.

Chap. I.—Continued fevers terminating in death . . . 611

Art. 1.—Continued fevers connected with follicular inflammation of the intestines 612

§ 1.—Observations on follicular enteritis at the period of the exantheme 613

§ 2.—Observations on follicular enteritis at the period of ulceration . 628

Art. 2.—Continued fever connected with other forms of gastro-intestinal lesion than follicular enteritis 673

Art. 3.—Observations on cases of different diseases, accompanied with typhoid symptoms, without any appreciable lesion of the digestive tube 682

§ 1.—Typhoid symptoms developed in consequence of different lesions appreciable by anatomy 683

§ 2.—Typhoid symptoms without lesions appreciable by anatomy . 698

Chap. II.—Continued fevers terminating in return to health . . 701

Art. 1.—Treatment by diet and simple diluents . . . 702

Art. 2.—Treatment by evacuants 706

Art. 3.—Treatment by antiphlogistics 712

Art. 4.—Treatment by tonics 717

Chap. III.—Resumé 727

Art. 1.—Etiology . . . . . . ib.

Art. 2.—State of the different organs after death and during life . 729

Digestive Tube . . . . ib.

§ 1.—Lesions found after death in the digestive tube . . ib.

A. Constancy of the lesions of the digestive tube . . . ib.

B. Frequency of the lesions of the digestive tube . . 731

C. Seat and nature of the lesions of the digestive tube . . ib.

a. Stomach 732

b. Small intestine 733

c. Large intestine 740

d. Matters contained in the digestive tube .. . . ib.

D. Connexion between the gastro-intestinal lesions and the symptoms 742

§ 2.—Functional lesions of the digestive apparatus . . 743

PAGE

CIRCULATORY APPARATUS 756
§ 1.—Lesions found after death in the circulatory apparatus . ib.
§ 2.—Lesions of the circulatory apparatus observed during life . . 765

APPARATUS OF THE LYMPHATIC CIRCULATION . . . 770

RESPIRATORY APPARATUS 771
§ 1.—Lesions of this apparatus observed after death . . ib.
§ 2.—Lesions of the respiratory apparatus observed during life . 772

APPARATUS OF THE SECRETIONS 774
§ 1.—Lesions of the cellular tissue . . . . ib.
§ 2.—Lesions of the serous membranes . . . 775
§ 3.—Lesions of the biliary apparatus . . . . ib.
§ 4.—Lesions of the urinary apparatus . . . 778
§ 5.—Lesions of the salivary glands and pancreas . . . ib.

APPARATUS OF THE LIFE OF RELATION 779
§ 1.—Lesions of those organs observed after death . . . ib.
§ 2.—Lesions of those organs observed during life . . 782

ART. 3.—Treatment 791
§ 1.—Treatment by diet and mucilaginous or acidulated drinks . 792
§ 2.—Treatment by blood-letting 795
§ 3.—Treatment by evacuants 801
§ 4.—Treatment by tonics and stimulants 804

CONTENTS OF PART V.

DISEASES OF THE ABDOMEN.

PAGE

SEQUEL OF BOOK I.—Diseases of the digestive tube . . . 807

SECTION II.—Diseases of the digestive tube in which local symptoms alone exist, or in which they predominate . . . ib.

CHAP. I.—Observations on acute gastritis . . . . ib.

CHAP. II.—Observations on chronic gastritis 818

ART. 1—Alterations produced in the stomach by chronic gastritis . . 819

§ 1.—Alterations of the mucous membrane . . . ib.

§ 2.—Alterations of the tissues subjacent to the mucous membrane . 835

ART. 2.—Symptoms of chronic gastritis 858

ART. 3.—Treatment of chronic gastritis 869

CHAP. III.—Observations on some affections of the stomach not inflammatory 870

CHAP. IV.—Observations on lead colic and other affections resembling it . 882

ART. 1—State of the digestive tube in persons who died with colic . . ib.

ART. 2.—Symptoms of lead colic 886

ART. 3.—Treatment of lead colic 888

A. Employment of strychnine 890

B. Employment of brucine 891

ART. 4.—Nature of lead colic 892

ART. 5.—Observations on some morbid states, bearing some analogy to symptoms &c., of lead colic 893

BOOK II.—Diseases of the liver and its appendages . . . 895

SECTION I.—Diseases of the parenchyma of the liver . . . ib.

CHAP. I.—Lesions found in the liver after death . . . ib.

CHAP. II.—Symptoms of diseases of the liver 902

ART. 1.—Local symptoms of diseases of the liver . . . ib.

ART. 2.—General or constitutional symptoms 916

§ 1.—Disturbances of digestion 917

§ 2.—Disturbances of circulation 921

A. Sympathetic disturbances of the circulation . . . 922

B. Disturbances of the circulation occasioned by an obstacle to the free circulation within the liver 924

§ 3.—Disturbances of the secretions and of nutrition . . 927

PAGE
Chap. III.—Cases 929
Art. 1.—Sanguineous congestions of the liver . . . ib.
Art. 2.—Alteration of nutrition in the parenchyma of the liver . . 939
§ 1.—Observations on hypertrophy of the liver . . . 940
§ 2.—Observations on softening of the liver 943
§ 3.—Observations on induration of the liver . . . 946
§ 4.—Observations on atrophy of the liver 950
Art. 3.—Observations on accidental productions in the liver . . 956
§ 1.—Observations on abscesses of the liver . . . . ib.
§ 2.—Observations on cancer of the liver . . . 967
§ 3.—Observations on hydatids of the liver 976
Section IV.—Diseases of the passages for the excretion of bile . . 981
Book III.—Observations on peritonitis 987
Section I.—Acute peritonitis . . . . . ib.
Chap. I.—Acute peritonitis terminating in death . . . ib.
Chap. II.—Acute peritonitis terminating in recovery . . . 1000
Section II.—Chronic peritonitis 1002
Chap. I.—Chronic peritonitis, acute at the onset . . . ib.
Chap. II.—Chronic peritonitis, chronic from the onset . . . 1004
Section III.—Partial peritonitis 1005
Chap. I.—Epiploitis . . . . . , . 100
Chap. II.—Partial inflammation of the peritoneum, flanks, &c. . . 1008
Chap. III.—Partial inflammation of the peritoneum in the pelvis . . 1009
Chap. IV.—Partial inflammation of the sub-peritoneal cellular tissue . 1012

CLINIQUE MÉDICALE:

OR

REPORTS OF MEDICAL CASES.

DISEASES OF THE ENCEPHALON AND ITS MEMBRANES.

FIRST BOOK.

DISEASES OF THE ENCEPHALIC MEMBRANES.

SECTION I.

DISEASES OF THE DURA MATER.

Case 1.—*Fibrous vegetation on the inner surface of the dura mater, with considerable depression of the part of the brain corresponding to it—Hemiplegia—Intelligence perfect—Headach of an old standing.*

A military man, sixty-one years old, entered the Hospital la Charité in the beginning of March, 1829. He appeared to have been of a good constitution, but when he presented himself, he was very much emaciated; his countenance was of a pale colour, somewhat yellowish; one half of the right eyelid was depressed before the globe of the eye, and it was incapable of being completely raised at the will of the patient; both extremities of the right side were deprived of the power of motion, and their sensibility was impaired; the urine was passed involuntarily; pulse remarkably slow.

The patient stated that, after having experienced, for a long time, rheumatic pains in different parts of the body, he was seized, about the beginning of the year 1817, with a headach, seated principally towards the anterior part of the left parietal bone. This pain was at first intermittent; then became continued for an entire year; then, from the middle of 1819, it disappeared altogether. This headach, the only thing the patient complained of, was at times insupportable. Nearly about the time it ceased, he thought the right upper extremity felt somewhat more insensible than the left, as did also the fingers of this side from time to time; they were cold, and usually presented a violet appearance. He gradually became unable to grasp anything with the right hand. Subsequently, the right upper extremity became completely paralytic, at the same time that the left lower extremity lost the faculties of sensation and motion.

For the first ten or twelve days after entering the hospital the state of the patient did not change; then the tongue became dry, and the pulse frequent;

his intellects became disturbed; diarrhœa came on; a broad eschar formed on the sacrum, and the patient died in an adynamic state towards the end of March.

Post mortem.—Considerable emaciation. On raising the vault of the cranium, no appreciable lesion on the external surface of the dura mater. On making an incision, however, into it, this membrane was found to have contracted unusual adhesions to the subjacent parts. These adhesions were formed by cellular bands, which united the two layers of the arachnoid to each other. These bands circumscribed a spherical body of the size of a large nut, which sank deep into the cerebral substance, with which it had not contracted adhesion in any other part. It was separated from it by a cellulo-vascular layer, which appeared to be the tissue of the arachnoid and pia mater compressed by it. This body was attached by a narrow pedicle to the inner surface of the dura mater, the fibres of the latter membrane being dispersed over the pedicle of the tumour, and so confounded with its tissue, that to distinguish them was impossible. This tissue, which was of considerable hardness, and of a white tendinous appearance, consisted of fibres which were, as it were, wound up one upon another; they seemed a prolongation of the fibres of the dura mater. Some infarction in the posterior part of the lungs; two white spots on the pericardium. The mucous membrane of the stomach, towards the great cul de sac, presented some red points; the end of the ileum, and part of the colon, presented a bright red colour.

Remarks.—From the nature of the symptoms and progress of the disease, one would have expected that softening was the lesion to be found in the brain in this case. That permanent flexion of the limbs oftentimes, though not always, accompanying softening, was not however here observed at any period. The rheumatic pains preceding the pain of head, might have led one to consider the latter also as rheumatic. There is not a doubt but that pain of head, similar to that we have described in this case, has been many times taken as the effect of neuralgia and rheumatism. The pain of head was here the first symptom observed, and it coincided probably with the commencement of the disease of the dura mater, and continued as long as the inflammatory process, necessary for the formation of the adhesions described in the post mortem, existed around the tumour, and ceased probably when the adhesions were changed into cellular tissue. The gradual manner in which the paralysis developed itself, was conformable to the nature of the disease; it was not preceded by any loss of consciousness, and the intelligence was never disturbed. No lesion explained the incontinence of urine. A bright redness of the stomach, and a portion of the intestine, coincided in this case with the adynamic symptoms under which the patient sank*.

CASE 2.—*Osteo-fibrous tumour, of the size of a pullet's egg, on the inner surface of the tentorium cerebelli, to which it closely adheres—Hemiplegia, with convulsive movements at intervals, on the side opposite that where the tumour was—Atrophy of the lobe of the cerebellum, corresponding to the tumour—Death by cerebral hæmorrhage.*

A shoemaker, forty-seven years old, addicted to spirituous liquors, fell on the occipital bone when drunk, about four years before entering the La Charité. Immediately after the fall he experienced no uneasiness. Subsequently, however, he began to feel a dull pain towards the left part of the occipital bone, which continued for a considerable time without becoming severe. Giddiness occurred also from time to time, often followed by total loss of consciousness, which never continued, however, beyond a few minutes. At a later period new symptoms presented themselves; on a sudden, the upper extremity of the right side was attacked with a painful, and as it were tetanic shock. Five or six of these shocks rapidly followed this, and during the three or four days following, the right arm continued torpid and somewhat weaker than that of the opposite side. At first there were intervals of months between these attacks; they then became more frequent, re-appearing every ten or twelve days, uniformly limited to the right arm, and at the same time paralysis of this limb, at first transient, became permanent, and more and more complete. Insensibly also the right lower extremity lost the power of motion; it never however exhibited any convulsive movement. Before entering the hospital he was attacked with giddiness, which becoming more severe, determined him on applying for admission. His state then was as follows:—

---

* For some very interesting cases illustrating the effects of pressure from tumours, see Dr. Bright's Reports of Medical Cases, vol. ii. part 1. p. 342, &c.

The face and eyes injected; some difficulty in articulating his words; answers slow, but correct; recollection clear; diplopia from time to time; commencing deafness. The patient complains of a dull pain towards the back part of the head, on the right side as well as on the left. The two extremities of the right side cannot be moved at the will of the patient; they exhibit however a certain rigidity, and yesterday again the arm suffered five or six shocks, which caused the patient to suffer considerably. Pulse very hard, but not frequent. The pulsation of the heart strong. The muscular system even still remarkably well developed.

Just when I had drawn up these details, and we were going to bleed the patient, he was seized with all the symptoms of apoplexy, and died the following day.

Post mortem.—In the place ordinarily occupied by the left part of the tentorium cerebelli, there was found a large tumour which compressed the posterior lobe of the cerebral hemisphere of this side, and also the cerebellum. The structure of the cerebral hemisphere not changed, *the tumour being principally developed on the* side of the cerebellum, the entire left lobe of which had undergone a most remarkable change, it being very much diminished in volume, and its substance having acquired extraordinary hardness. Neither the cerebrum nor cerebellum were continuous with the tumour. Interposed between them, and evidently produced at the expense of the dura mater, whose place it occupied, this tumour very much resembled that described in the preceding case, except that it contained in some parts a little calcareous deposit. In the right hemisphere of the cerebrum was found an enormous sanguineous effusion, which, occupying the corpus striatum and optic thalamus, had made its way into the two lateral ventricles through the lacerated septum. The parietes of the heart were hypertrophied.

Remarks.—In this, as in the preceding case, the cerebrum was not all affected; but one of the lobes of the cerebellum, being compressed by it, underwent considerable atrophy. Still none of those functional disturbances, which, according to authors, are connected with lesions of the cerebellum, were here remarked. The symptoms were just the same as if the tumour were seated in the cerebrum. The development of the osteo-fibrous tumour of the dura mater, seemed to be owing originally to the fall which the patient had suffered several years previously.

SECTION II.

DISEASES OF THE ARACHNOID AND PIA MATER.

There are few diseases whose symptoms present so many varieties and so many individual differences as acute inflammation of the meninges. Are there well marked signs, by the aid of which we may readily distinguish during life inflammation of the meninges lining the upper surface of the brain from that connected with the lower surface of this organ? Are there any special functional disturbances appertaining to inflammation of the membrane lining the parietes of the ventricles? By what signs can we recognise inflammation of the membranes lining the spinal cord?

Whatever be its seat, can acute meningitis be distinguished by its symptoms, either from the other acute affections of the encephalon, in which this organ is found materially changed, or from those very frequent cases in which irritation of the brain or its coverings, merely sympathetic of irritation of some other organ, leaves no trace of its existence in the dead body? In a word, in the dead body itself, what are the anatomical characters by whose aid we shall be enabled to affirm that there really was acute meningitis in the cases where, during life, symptoms existed which seemed to belong to it? Such are the questions as yet undetermined in science, in the solution of which we think the following cases will assist.

CHAPTER I.

CASES OF DISEASES OF THE ARACHNOID AND PIA MATER COVERING THE UPPER SURFACE OF THE BRAIN.

Case 3.—*Effusion of blood between the Arachnoid and Dura Mater.*

A coachman, seventy-three years of age, of a strong constitution, had fallen from his seat nine years previously, and received a deep cut in the left temporal region, for which he was trepanned at the La Charité. He had not lost his consciousness from the fall, and after it he continued to enjoy perfect health.

Towards the 20th March, 1822, he felt, without any known cause, both in the lower extremity and in the arm of the right side, a numbness, with difficulty in moving these limbs, pains also in the elbow and heel; at the same time vertigo, ringing of the ears, headach, and somnolence. The following days there was gradual augmentation of these symptoms, and at length he became unable to follow his usual calling. Three days before entering the hospital the motions of the left lower extremity began to be difficult.

When he entered the hospital on the 6th of April, 1822, he presented the following state:—obstinate constipation, tongue natural. The two extremities of the right side could still perform some motions, but very feebly; the left lower extremity was somewhat less weak than the right; pulse full and strong. Twenty leeches to the neck, friction on the limbs with camphorated spirits.

On the 8th, a diminution of the vertigo, headach, and somnolence; had two evacuations in twenty-four hours. Eighteen leeches to the neck, sinapisms to the legs. On the night of this day delirium set in. The following morning less pain of head, but the paralysis more marked. The three following days a gradual increase of the latter. On the 13th the countenance very much injected, drowsiness, pain on moving the right arm; hemiplegia of the left side incomplete, whilst that of the right side is complete; tongue red and dry, fæces and urine passed unconsciously; pulse strong and quick; skin hot and dry (enemas and leeches to the neck, and blisters to the legs with diluent drinks). On the 14th, respiration stertorous; total loss of consciousness; coma. He died in the evening.

Post mortem. The arachnoid, thickened and red, was detached from the dura mater of each side by an effusion of blood, partly fluid and partly coagulated, which had completely dissected the serous membrane from above downwards, from the part adjoining the great falx of the dura mater to the temporo-parietal suture, and from before backwards, from the coronal fossa to the posterior end of the parietal. The detachment and effusion were more considerable on the left. The depression of the hemispheres was nearly an inch on the left, only half an inch on the right. Beneath the effusion the cerebral substance was very firm, and presented very few bloody points, but the sinuses contained a considerable quantity.

Remarks.—We have here a rare case of pathological anatomy. It is not easy to conceive how a thin fine membrane, such as the arachnoid is, can be separated from the dura mater by effused blood without being torn.

The symptoms here were altogether in relation to the seat and nature of the lesion. The prevailing symptoms existed at first with respect to motion; there was double paralysis, as there was double effusion. It was not till a later period the intellectual faculties became disturbed. The hæmorrhage, slowly produced, acted at the same time by compressing and irritating the brain.

CASE 4.—*Effusion of blood between the Arachnoid and Dura Mater—Gradual paralysis of the right side with permanent flexion.*

A man, seventy years of age, of a lymphatico-sanguineous temperament and weakly constitution, felt, for the last two months, on the left side of the head, and particularly in the temporal fossa, a constant headach, which went on increasing up to the 4th of May. We could obtain no particular account with respect to the nature of this pain, and the symptoms accompanying it. We only know, that at the above mentioned period, the patient began to stammer, the tongue became embarrassed, intelligence seemed weakened, and in the morning the right side of the body was imperfectly paralysed. This hemiplegia made very slow progress on the following days. There was added to it continued fever with adynamic symptoms. When brought to the hospital on the 15th of May, he presented the following state:—Prostration, lying on his back, pupils equally moveable, countenance very flushed, features drawn to the right, lips dry, tongue red, dry, cleft, trembling, but no deviation to either side; breath fetid, stools and urine passed involuntarily. Considerable heat of skin, with moisture; pulse strong, full, and frequent. The extremities of the right side present a paralysis of motion, but not of sensation. To this is added, in the upper extremity, strong contraction of the flexor muscles of the fore-arm on the arm; the patient seems to understand what is said to him, but he answers very indistinctly. Great drowsiness (two blisters to the right lower extremity, one to the thigh, one to the leg). On the 16th and 17th, gradual increase of the hemiplegia; the rigidity of the upper extremity continued up to the 20th, when there was observed stupor, stertor, total extinction of intelligence (twenty-five leeches to the neck, two sinapisms to the feet). On the 21st the rigid contraction of the right arm ceased, total extinction of motion and sensation on the right side, breathing stertorous, eyes dull, pupils equally moveable, pulse continually full and strong, skin hot and moist (sixteen leeches to the neck). Died at ten o'clock at night.

Post mortem. The vessels uniting the bones to the dura mater appeared very much injected on the left; on dividing this membrane, we found between it and the arachnoid, along the posterior three-fourths of the lateral wall of the cranium, and from its base to the falx of the dura mater, an effusion of blood, partly liquid, partly coagulated, black, depressing the serous membrane for nearly an inch at the centre, gradually diminishing in thickness to the circumference. The two folds of the arachnoid were red and thickened. The cerebral substance of the two hemispheres were dotted with blood; a little serum in the ventricles; heart very soft and flaccid; brownish colour of the gastric mucous membrane, towards the great curvature.

Remarks.—One of the most curious circumstances in this case is, that the symptoms connected with it, very much resemble those occurring ordinarily in softening of the brain. Thus, the disease commences by a cephalalgia fixed to one point of the head; then the intelligence becomes impaired; subsequently the limbs opposite the side of the head affected with pain become gradually weakened, and ultimately the paralysed limbs present a well marked contraction. All these are the signs of softening of the brain—still not the slightest trace of this alteration; nothing being found but a collection of blood between the dura mater and arachnoid, the latter being also thickened and diseased.

Case 5.—*Partial Meningitis—Erysipelatous phlegmon of the neck supervening on a contusion of this part—Signs of arachnitis only during the last hours of life.*

A postilion, thirty-three years of age, of a strong constitution, received, on the 2nd February, 1822, on the right side of the neck, a very heavy sack of oats, which fell on him from a height of several feet. He, however, continued his customary occupation till the 7th. He felt a painful tension on the right side of the neck, at which part the skin assumed an erysipelatous appearance; fever came on, and the patient kept his room. The fever continued on the 8th, 9th, and 10th, and the erysipelas spread. On the 11th he entered the hospital, when the fever was very high; the neck was covered with leeches. Desquamation commenced at several points of the skin of the neck; but on the right, behind the sterno-mastoid muscle, an obscure fluctuation was observed; this muscle also seemed more prominent than that of the opposite side; no other morbid symptom; no stool for three days. At one o'clock in the morning the patient suddenly became delirious. On the 12th, at eight o'clock, the delirium still continued; eyes haggard, constantly rolling; pupils very much contracted; violent screams; free motion of the limbs; pulse frequent and very weak; tongue moist and red; burning thirst; no stool; some leeches applied the preceding day still bleeding (blister to one thigh, sinapisms to the legs, purging enema, acid drink). Three hours after the visit he expired.

Post mortem. Arachnoid and pia mater natural in every respect, except for the space of three fingers' breadth in length, and two in width, near the anterior extremity of the upper surface of the left hemisphere of the brain. There the membranes were thickened and red. A small quantity of limpid serum in each lateral ventricle; the posterior part of the two lungs infarcted; the mucous membrane of the stomach presented, at the pyloric portion, a slight brownish tint; the spleen very soft; a great quantity of pus infiltrated the cellular tissue beneath the sterno-mastoid muscle of the right side.

Remarks.—This is a very remarkable case. It is probable that the partial arachnitis, ascertained in the dead body, commenced only with the delirium; the disturbance of the intelligence, and a striking contraction of the pupils, were the only two phenomena occasioned by this inflammation; at times these very slight inflammations of the meninges are sufficient to disturb the intellect. We may note also, that here the inflammation was seated at the anterior and superior part of one of the cerebral hemispheres, where, in fact, several physiologists more particularly place the seat of intelligence. But why this contraction of the pupils? What relation between an irritation so slight, and so well circumscribed, of a very small portion of the meninges, and the movements of the iris? The nervous centres may then be injured in their functions, without the anatomist being able to discover any alteration.

Case 6.—*Acute Meningitis limited to the convexity of the left hemisphere of the brain—Delirium.—Convulsive movements of the face and extremities of the right side.*

A tailor, thirty-seven years of age, had been sick for four or five days when he entered the hospital, 17th July, 1821. On the 15th of this month, without any known cause, he was seized with violent pain of head, particularly seated in the frontal region. On the day after, the headach continued, and the pain became more general, being extended now to the parietal and occipital regions. On this day he lost his appetite, and vomited some drink he had taken. In the evening, constant nausea still appeared, followed from time to time by a throwing up of some bitter yellow matter. On the 17th, the headach still continued, but the vomiting ceased; some nausea still. Having entered the hospital, he presented, on the next day's visit, the following state:—face remarkably pale; pain of head, the precise seat of which cannot be pointed out by the patient; at intervals this became so very severe as to make him utter piercing cries; eyes dim and languid; slight involuntary motion of the muscles which move the commissure of the lips; his answers accurate; gives a perfect account of his state, and of every thing which happened to him since the commencement of his illness; the pulse moderately frequent, and regular; everything else natural.

It was difficult to assign a precise seat to this group of symptoms; the first complaints, however, regarded the head; the vomiting might be considered as connected with a commencing cerebral affection, and the severe headach seemed to point out the head as the seat of the disease. The absence of any morbid phenomenon, with respect to the alimentary canal, repelled the idea that the headach was sympathetic of gastro-intestinal irritation. The absence of all febrile disturbance precluded the possibility of its being mere continued fever. The state of the patient, however, appeared very alarming; the appearance of his countenance, and, amidst this absence of local symptoms, the great alteration already of his features, obliged us to form a rather unfavourable prognosis. M. Lerminier suspecting a state of encephalic congestion, applied, notwithstanding the extreme paleness of his face, twenty leeches across each jugular vein. Demulcent drinks, and sinapisms to the lower extremities. No change in the patient on the following morning.

On the 20th, he was very much cast down, and answered questions with difficulty and reluctance; light was painful to him; he kept his eyes closed, and his head concealed under the bed-clothes; face very pale; pain of head not great; the convulsive movements of the lips more frequent and more marked; pulse and skin natural (blister to the nape of the neck). In the night he emerged from a state of stupor, in which he had been for the last twelve hours. He got up out of bed suddenly, saying that some persons were pursuing him to do him harm. He raved during the night, and occasionally uttered several piercing cries.

On the 21st, he was kept in bed by force. The face had now become red; the head was agitated by a continual movement, which carried it from right to left, and left to right; the muscles moving the lips, the alæ nasi, and the eyebrows, were in the highest degree of convulsive agitation; saliva, slightly frothy, flowed in great abundance from the mouth; he spoke incessantly and with energy, but his articulation was unintelligible; great subsultus tendinum, which prevented the pulse from being felt; its frequency did not seem very great (bleeding from the arm, twenty leeches to the neck, cold applications to the head). No change on the 21st.

On the 22nd, violent delirium; convulsive motions of the muscles of the face; risus Sardonicus; continual motion of the right arm; subsultus increased; pulse more frequent; tongue moist and red (two blisters to the thighs; ice to the head).

On the 23rd, head turned back, and to the right; strong contraction of the right arm; respiration very irregular; occasionally accelerated; it then becomes slower than natural. The patient silent, and quite still; eyes fixed, and void of expression; mouth open and unmoved; pupils neither contracted nor dilated; answers no questions; does not even seem to understand them; original paleness of face returned; pulse sixty a-minute, and regular; bowels not free; tongue cannot be seen; teeth not dry. He remained quite torpid during the day, but at night violent delirium reappeared; uttered very loud cries.

On the 24th, this excitement was succeeded by profound coma; extremities cold; a clammy sweat covered the face; respiration *ralant*. Died in the course of the day.

Post mortem.—On the upper surface, a considerable difference in the colour of the two cerebral hemispheres, the right being pale, whilst the left presented a well-marked red tint, which resided entirely in the subarachnoid cellular tissue, which was traversed by numerous vessels; neither serum nor pus in this tissue; the grey substance constituting the most superficial portion of the convolutions of the left hemisphere participates in the injection of the pia mater covering it. The ventricles contained scarcely two spoonfuls (cuillerées a cafe) of serum; nothing remarkable in the rest of the brain. The lungs infarcted posteriorly; the heart contained in its right cavity a large fibrinous clot, deprived of its colouring matter; the mucous membrane of the stomach very thin towards its great cul-de-sac.

Remarks.—This case presents an example of acute meningitis more extensive than the preceding case, but still partial; it occupies, in fact, but one of the sides of the brain, the median line accurately limiting it. The first symptom was pain of head, which was of long duration and remarkably severe. This, after a little, was complicated with gastric symptoms, which appeared entirely the sympathetic result of the brain affection. The nausea and vomiting arose from the disturbance of innervation, but these sympathetic phenomena soon disappeared. The brain symptoms gradually became worse. The intelligence, also, so perfect when he entered the hospital, became gradually disturbed. The slight convulsive movements of the lips were soon succeeded by convulsions of the entire face and of the right arm, which latter was ultimately found to be permanently flexed. The disturbance in the motion of the right arm might cause us to anticipate that the opposite side of the brain was the seat of the disease; the pain of head not being confined to the affected part of the cerebral membrane, could not assist in determining it. The therapeutic means adopted seem to have had no influence whatever on the disease. A little more blood than natural, accumulated in a circumscribed portion of the pia mater, was enough to destroy the nervous functions, and ultimately life.

CASE 7.—*Meningitis limited to the anterior extremity of each cerebral hemisphere—Rosy tint and slight softening of the subjacent grey substance—Follicular enteritis proceeding towards a cure—Symptoms of ataxic fever.*

A boy, seventeen years of age, entered the hospital February 18th, 1824, with symptoms of slight continued fever; headach; tongue white, moist, slightly red at the point and edges; thirst considerable; constipation; no change in his state for the five or six days following, during which interval he was bled from the arm, and twenty leeches were applied to the anus.

On the 24th, we were struck with the air of distraction in the patient's countenance; he answered questions with difficulty, and appeared to be absorbed in thought.

On the 25th he was sunk in stupor; pupils perceptibly dilated; tongue natural; pulse small and frequent; skin hot (twenty leeches to the neck). During the two following days no change.

On the 28th he emerged from the stupor, became restless, and spoke continually.

March 1st, stupor returned; dilatation of the pupils extreme; tongue quite natural; pulse very small and frequent; notwithstanding the torpid state of the patient, the cutaneous sensibility was very much increased; he complained whenever we touched the skin, particularly on the thorax and abdomen; he pushed the hand which touched him, and complained of pain (leeches again to the neck, and blisters to the legs). He died the next night.

Post mortem.—Fulness of the veins traversing the convexity of the cerebral hemispheres; the portion of the pia mater covering the anterior extremity of each of the hemispheres very much injected; rose-coloured tint, together with slight diminution in consistence, of the cortical substance in contact with the pia mater at this part of the brain. No other appreciable alteration in any part, except that the lungs contained some small granulations not resembling those usually met with, which, when cut into, allowed a small quantity of limpid serum to escape. The inner surface of the stomach was very white, except one small spot, which was red, and seemed formed by the aggregation of small vessels finely injected. In the small intestines several of the follicles were more developed than natural; some single, and others aggregated together, constituting what are called *Peyer's* *glands;* they presented black points, and projected somewhat beyond the level of the mucous membrane.

Remarks.—This is another case where inflammation of the membranes existed only in a very small extent of the external surface of the brain. The pia mater was injected merely towards the anterior and upper part of each hemisphere; and in this part the grey substance of the circumvolutions participated in the irritation of the membrane covering it. This is all that was found to explain the serious nervous disturbances which manifested themselves on the last days of the patient's life. No doubt but the patient died in consequence of the lesion of the nervous centres. The entire disease, however, did not reside here; for, on entering the hospital, nothing manifested itself but mere continued fever, without any well marked local symptom; the intestine was then diseased, and we doubt not but that, at first, there was follicular enteritis, which was in progress of cure, as appeared from the *post mortem;* then the partial meningitis supervened, which rapidly gave the most serious character to a disease till then mild.

Case 8.—*False membranes of recent formation on the arachnoid, lining the convexity of the left hemisphere—No other appreciable lesion of the meninges—Headach at the outset—Delirium—Tubercles in the lungs and spleen.*

A man, forty-three years of age, entered the Hospital la Pitié at the commencement of the month of April, 1831, presenting the ordinary symptoms of pulmonary phthisis. On the 19th of May he complained of an acute pain, seated in the left temporal region. This pain, which was not increased by pressure, became occasionally insupportable, and then radiated towards the parietal and orbital regions of the same side of the head. This was the first time he complained of such a pain; it had appeared the night previous, and prevented him from enjoying a moment's sleep. No other change in the state of the patient; the pulse was, as we usually found it in the morning, from 70 to 80; no appreciable disturbance in sensation or motion. This pain, then single, and unaccompanied by any other symptom, was considered mere temporal neuralgia, and nothing particular was prescribed. However, the following day and night the patient suffered dreadfully in the temporal region. On the 20th of May, though seeing no reason to change our diagnosis, we had him bled from the arm to twelve ounces; the blood, examined the next day, consisted of a small clot, rather black, without any appearance of the buffy coat, and encompassed by a great quantity of serum. The pain of the left temple had not diminished; no other new symptom manifested itself. On the 21st, still headach; no change at all; twenty-four leeches were applied to the left mastoid process, which bled freely; still the headach as intense as ever. Still conceiving the affection to be a neuralgia, we applied an opium plaster to the left temple, and ordered a grain of hyoscyamus to be taken internally. On the 23rd, 24th, and 25th of May, no change; but on the 26th we remarked, for the first time, that the skin of the two eye-lids, as also those of the cheeks, was raised by serum accumulated in the cellular tissue; this skin still preserved its natural colour; headach still continuing; the pulse was, as usual, 80; a blister was applied to one of the lower extremities.

On the night of the 27th, the intellect disturbed for the first time; he arose from bed, and became very noisy. Towards morning the delirium ceased, and at the visit we found him as usual, except that he complained less of the temple. On the night of the 28th, the intellect again disturbed, and delirium returned; in the morning he answered questions very incoherently; the œdema of the face increased, without the skin being red; pulse 88, and the temperature of the skin raised. In the course of the day the patient became comatose, and died on the 29th.

Post mortem twenty-nine hours after death.—The cranium being raised, and the dura mater divided, we found covering the convexity of the left hemisphere of the brain, at the point of union of the middle and anterior lobes of this hemisphere, a whitish false membrane, soft and not yet presenting any character of organisation, and merely in apposition with the arachnoid, to which it did not adhere. This false membrane was somewhat broader than a five-franc piece. On other points of the arachnoid, of the same side, there were deposited as it were small drops of white, thick pus, which we raised on the back of the scalpel. Two or three such drops were found on the portion of the arachnoid covering the left surface of the great falx cerebri; no other appreciable alteration in the arachnoid or brain. In the thorax were numerous tubercular masses, some of which were softened. The internal surface of the stomach presented a slate-colour tint, with papillary thickening of the mucous membrane along the great curve. About a quarter of the spleen converted into a large tubercular mass.

Remarks.—This is one of those rare cases wherein the arachnoid, properly so called, is the seat of the disease. It is in fact in its cavity that the morbid products existed. On the right every thing remained in the most natural state. It is a case of real arachnitis, similar in every respect to inflammation of serous membranes elsewhere. This inflammation of the arachnoid will easily explain the different nervous symptoms during life. Thus the pain which affected the left temporal region so long and so severely, was not a mere neuralgia. It marked the commencement of the arachnitis, and for a long time continued sole, and it was only towards the end, that more decided symptoms of arachnitis appeared, first delirium and then coma, which was followed by death.

CASE 9.—*Partial meningitis—Tubercles in the pia mater, and in other organs; adhesions of two circumvolutions—Headach at first; afterwards delirium; contraction of the muscles of the neck; paralysis of some muscles of the face.*

A man, nineteen years of age, on entering the La Charité, complained of a violent headach, principally seated towards the right temple, under which he has been labouring now twelve days. His intellect perfect; he constantly lies on the left side. Pulse slow (sixty a minute); the pupils a little dilated; countenance expresses an air of indifference; tongue natural; has some difficulty in passing urine. This group of symptoms make us apprehend the development of a cerebral affection; he was ordered to be bled from the foot, and forty leeches to be applied to the neck. The day after (14th March) the air of indifference was succeeded by complete delirium; the head remained constantly inclined to the right; pulse now seventy-two. He was bled from the arm. In the evening he can now answer questions tolerably, which he could not in the morning. When we attempt to incline his head to the left, he evinces pain; the right side of the mouth then opens, whilst the left half remains unmoved.

March 15th. Look fixed; head still inclined to the right; delirium still continued; air of stupor; pulse more frequent than on the preceding days; tongue natural; abdomen free from pain; no evacuation by stool (thirty leeches to the neck, laxative enema). Whilst the leech-bites were still bleeding, the pupils, which till then had remained dilated, contracted in a very remarkable manner. The pulse became very frequent, irregular, and small; the mouth became filled with foam; the tracheal râle set in, and the patient died at half-past twelve at noon.

Post mortem.—The pia mater covering the upper surface of the cerebral hemisphere, contained about twelve small whitish granulations, the size of a lentil, and of cartilaginous consistence. They were found between the convolutions. On the middle lateral part of the right hemisphere, was observed a bright red injection of the pia mater, for a space as large as two five-franc pieces put together. Between two circumvolutions of the middle lateral part of the left hemisphere, was found a white tubercle of the size of a large pea, softened at its centre. These two convolutions had contracted intimate adhesions, and were confounded with each other. Numerous tubercles in a crude state traversed the lungs. The lymphatic ganglions of the posterior mediastinum also tuberculated. Three small tubercles in the spleen.

Remarks.—Of the alterations found after death in the body of this patient, some were dated from a period much prior to the attack of the disease under which he fell. Such were the tubercles in the pia mater, in the lungs, in the lymphatic ganglions of the posterior mediastinum, and in the spleen. The adhesion also of the two convolutions of the left hemisphere was a lesion of long standing, and prior to the disease observed by us; to explain the latter, then, we have but the injection of the pia mater in a very small portion of its extent, without any other alteration of this membrane, or of any other part of the encephalon. When the lesions were so slight, and the symptoms so severe, who would dare to affirm that these lesions represented everything that did exist, and that anatomy showed us every thing that was materially altered in the nervous centres? Certain it is that the only appreciable alteration of recent formation, discovered on opening the body, existed in these centres; and it was here also during life, that the entire disease seemed to reside. For a considerable time it appeared unattended with anything serious; an obstinate headach, situated towards the point where, after death, we found the pia mater injected, was for the first twelve days, the prevailing symptom. When we saw the patient, his intelligence was perfect, his faculties of motion and sensation were unimpaired, and he had no fever. Still from the very first we were struck with his position when in bed, and this phenomenon, added to the air of indifference expressed in his countenance, directed our attention to the brain. On the following days the disease, which had been at first mild, was accompanied by most marked and alarming nervous symptoms. Delirium, partial paralysis of the muscles of the lips, painful contraction of the muscles of one side of the neck, particularly engaged our attention. Whilst these phenomena were developing themselves, the pulse became accelerated, the tongue preserved the most natural appearance. In this case the most active antiphlogistic treatment was employed. During the three days the patient remained in the hospital, he was bled twice, and seventy leeches were applied to his neck. Still the most serious symptoms supervened every day, and we shall even remark, at least as a mere coincidence, that it was immediately after the application of the last leeches that the struggle commenced. Had the loss of blood any share in the symptoms which appeared during the last hours of life? we would be inclined to think it had.

CASE 10.—*Milky infiltration of the pia mater on the upper surface of the cerebral hemispheres—Turbid serum in the great cavity of the arachnoid—Suppuration of the pituitary gland—Vegetations on the aortic valves, with production of encephaloid matter at their base—Delirium—Hurried respiration—Pleurosthotonos.*

A man, sixty-four years of age, was brought to the La Charité on the 27th of May. Those who brought him stated that he was ill for the last fourteen days, but gave no other information regarding him. On the next day he presented the following state:—Countenance very pale and dejected; lies on his back; œdema around the ankles; delirium; complains continually; voice weak and trembling; respiration high, hurried, very painful, as if there were some obstacle to the free entrance of the air into the pulmonary vesicles; no lesion, however, detected by auscultation in the lungs; the air appears to penetrate in every part; the pulse, being very small, contrasts with the strength of the pulsations of the heart, which are accompanied with a well-marked bruit de soufflet; tongue natural; abdomen soft (diluent drinks, sinapisms). On the 29th, his entire body strongly inclined to the right; the muscles of the neck, and those of the trunk of the same side, being spasmodically contracted, prevented the neck and head from being brought into the straight position; still less could they be made to deviate to the left. To these symptoms of pleurosthotonos were joined delirium, great dyspnœa, extreme frequency of the pulse, which was at the same time thready. Died at noon.

Post mortem.—Body very much emaciated; œdema of the lower extremities.

Cranium.—The great cavity of the arachnoid contained a considerable quantity of milky serum; the pia mater lining the upper and lateral surfaces of the cerebral hemispheres was infiltrated with liquid similar to thick cream; no trace of the pituitary gland to be found in the sella turcica; in its place there was a collection of pus*.

Thorax.—Lungs and pleuræ sound; a little serum in the pericardium; right cavities of the heart distended by an enormous clot of blood; one of the aortic valves had, on its ventricular surface, a greyish vegetation, easily detached with the scalpel from the tissue on which it rested; another of the aortic valves had entirely lost its usual appearance; it was changed into a reddish mass, and towards its point of union with the internal membrane of the vessels, the latter presented an evident fluctuation; a slight incision was made on the point where this fluctuation existed, and there escaped between the lips of the incisions a chocolate-coloured matter, of a softish consistence, like a mixture of blood and cerebral matter. It is more probable that this was blood effused and altered, than the result of a morbid secretion.

Remarks.—In this case, which we had not the opportunity of seeing till a very advanced stage, the membranes were more seriously affected than in any of the preceding. First, they were changed to a greater extent; then there was not only hyperemia, but purulent secretions on the two surfaces of the arachnoid, and, what is most unusual, suppuration of the pituitary gland.

The symptoms first observed were those usually accompanying meningitis of the convexity of the hemispheres. How shall we account for the pleurosthotonos, whilst the lesion of the membranes was the same on the right and left? The principal cause of the difficulty of respiration appears to have been the alteration of the sigmoid valves of the aorta. This was probably the cause of the bruit de soufflet.

CASE 11.—*Purulent infiltration of the sub-arachnoid cellular tissue of the upper and inner surface of the two cerebral hemispheres—Bright red injection circumscribed to the middle lateral portion of the left hemisphere—Tubercle in the brain—Pain of head; hemiplegia of the right side; dulness; vomiting; infrequency of pulse.*

A boy, seventeen years old, felt for the preceding fifteen days violent pains of the head, and experienced for the last two days only commencing weakness in the lower extremity of the right side, when he entered the hospital on the 24th July 1822. His state then was as follows:—Countenance very pale, slightly puffed; pupils natural; vision and intelligence perfect; the lower extremity of the right side seems to the patient heavier than the left. Since the preceding night only he began to feel some difficulty in moving the upper extremity of the right side, and it seems heavier to him than the other; the sensibility of both these limbs, however, is unimpaired; pain of head very acute, and occasionally extorts loud cries from the patient; pulse irregular, but not frequent; respiration high, and the intervals between each inspiratory movement unequal (twenty leeches behind each ear, sinapisms to the legs). A few hours after the visit the patient fell into a profound stupor. The following morning, 25th July, the coma disappeared; intelligence perfect; answers precise; pain of head continues; paralysis of the right side increased; pulse very irregular, and fifty each minute; vomited a green bitter matter twice or thrice during the night; tongue still the same (thirty leeches to the neck, two blisters to the legs). On the visit of 26th sunk into a profound coma; his countenance, however, indicates pain, when the limbs are pinched;

---

* From the situation of this organ, which is such as to protect it from injury, it is probable that there are some very important functions assigned to it, with the nature of which we are totally unacquainted. Considerable importance has been attached to it as connected with epilepsy. Dr. Bright mentions a case, vol. ii. p. 301, where it was wanting.

pulse preserves its slowness and great irregularity; skin cool and moist (a blister to the nape of the neck). On the 27th, eyes open, but immoveable; vision appears to be gone; he seems not to understand any thing; and articulates not a word (stimulating frictions to the limbs; ice to the head; sinapisms to the legs). On the 28th, pulse ninety-six. On the 29th, other symptoms appear; the eyes and face are become the seat of slight convulsive twitches, which are repeated at short intervals; coma not increased; he stares at those questioning him, without answering; distinguishes objects well; complains very much; retracts the arm a little when it is pinched; this arm when raised falls as an inert mass, whilst he holds the left arm raised without any effort; pulse eighty; the respiration proportionally more accelerated than the circulation (ice to head continued). On the 30th, the intelligence returned, the patient answers questions, hears and sees perfectly; pulse ninety-two, and the respiration still accelerated; paralysis of the right side continues. On the 31st, the patient, whose state for the last two days was so perceptibly improved, relapses into coma; during the day the respiration, which is now accompanied with a rale, becomes more and more accelerated, and the patient expired, as if in a state of asphyxia, during the night.

Post mortem.—The pia mater covering the upper surface of the two hemispheres was infiltrated with a thick purulent layer; the arachnoid itself being in its natural state. On the left, below the pia mater, near the great interlobular fissure, several circumvolutions present a bright red appearance; some even present a uniform red tint; the tissue of the circumvolutions in other respects natural; outside the left lateral ventricle, on a level with the ancyroid cavity, the cerebral substance contains a tubercle the size of a large pea, developed in a mass of grey substance. Tubercles were found in great numbers in the two lungs.

Remarks.—In this case the membranes were not only injected, they were also the seat of purulent secretion. One of the most striking of its symptoms was the paralysis of one side of the body, which developed itself from the commencement of the disease, and went on increasing. It seemed as if the left hemisphere of the brain was subjected to some compression, and yet such did not appear. The purulent layer between the arachnoid and brain was on both sides; on the left only some of the circumvolutions participated in the irritation of the membranes, inasmuch as they were considerably injected. If that were the cause of the paralysis, why was it not preceded by a state of contraction of the limbs, as happens very often in inflammations of the cerebral pulp? Beside this permanent symptom we find others remarkable for their appearing and disappearing alternately; thus the intelligence went and returned; the very evening before death it was quite perfect; still it is very probable that these lesions in the pia mater, which we discovered the following day, existed at that time. Several times also the patient fell into a state of coma, which is considered as appertaining to inflammation of the meninges covering the lower surface of the brain; and this coma was also moveable as the delirium. The sight also went and returned. Was it not strange that these functional disturbances were but transient, whilst the lesions causing them were permanent? In such a case it must be admitted that these symptoms depended less on the cerebral membranes themselves than on the way in which the cerebral pulp was affected at different periods of the disease by the irritation of the membranes enveloping it. Thus in pericarditis the variability, mobility, and oftentimes also the transient nature of the symptoms depends on this, that the heart in all persons, or in one and the same person, during the entire course of the disease, is differently affected by the irritation of its investing membrane.——No alteration in the pulmonary parenchyma, nor in its investing membrane accounted for the very great disturbance of the respiration that was observed. The symptom, as also the vomiting that took place, must have depended on the cerebral affection.

CASE 12.—*Abuse of spirituous liquors—Pleuro-pneumonia at the outset—Febrile delirium—Employment of opium in a large dose—Purulent infiltration of the sub-arachnoid cellular tissue of the convexity of the hemispheres.*

A coachman, forty-eight years of age, addicted very much to alcoholic liquor, was received into the La Charité on the 25th of September. He then complained of a pain below the left mamma. On the posterior and inferior part of this side, a well marked crepitating râle was heard, and the sound in this part also was dull. The patient coughed frequently, and expectorated transparent viscid sputa, which were slightly streaked with blood. He had considerable fever. Three days previous, this person, being till then in good health, was seized with a violent shivering; then pain of side, oppression, and cough became manifest. These symptoms of pleuro-pneumonia were met by bleeding from the arm to sixteen ounces, and the application of twenty leeches to the side, which was done immediately after the bleeding. The blood taken from the veins exhibited the buffy coat. On the following day there was an evident amendment. On the night of the 26th the patient was suddenly seized with delirium. On the 27th, the delirium still continued; the general symptoms of pleuro-pneumonia were gone. Fever still. He was bled to twelve ounces; blood buffed.

His state on the 28th still the same (thirty leeches to the neck). On the 29th, delirium still continued. Guided as well by the existing symptoms, as also by knowing the previous habits of the patient, we began to suspect that the case was one of delirium tremens; we determined to try opiates, and ordered ninety-six drops of Rousseau's laudanum to be given in two doses. He took the first without any perceptible effects; in two hours after he took the other, and soon fell into a tranquil sleep till the following morning. He awoke at the visiting hour, and answered, with precision, the questions addressed to him, and again fell asleep; he awoke in the afternoon in the full possession of his reason. On the 1st of October there was considerable fever, which was accounted for by pulmonary engorgement, detected in the posterior and left side of the chest, the crepitating râle being distinctly heard here; the use of opiates was suspended. On the 3rd, the crepitating râle was still heard, and in the evening the fever was much increased. On the 4th, the pulse very frequent, and a tendency to delirium re-appeared; two blisters to the legs. However, in the course of the day, all tendency to delirium disappeared, and the pulse became less frequent. The three days following the intelligence became perfect, and every thing became so favourable, that he appeared likely to be able to leave the hospital very soon; when, on the 9th, his intelligence again became disturbed, and the pulse was somewhat accelerated; upon which, an anodyne potion, containing a scruple of laudanum, was prescribed; two blisters were applied to the thighs, and sinapisms to the lower extremities, but without any benefit. On the 17th, 18th, and 19th, the delirium became complete. On the 20th, the tongue, for the first time, lost its natural appearance; it became red and somewhat dry. The seven days following, continual delirium, increasing prostration; tongue dry and brown; fæces passed involuntarily; pulse frequent and small; rapid emaciation of the face. He died on the 27th of October.

Post mortem.—A turbid milky serum infiltrated the sub-arachnoid cellular tissue of the convexity of the hemispheres in considerable quantity. The lateral ventricles contained but a small quantity of limpid serum. In the thorax, cellular bands closely united the pleura costalis, and pleura pulmonalis of the left side. A great quantity of frothy serum gushed out of the tissue of the two lungs; this tissue also retained the impression of the finger like an œdematous limb. The pericardium adhered close to the heart by a dense cellular tissue, whose formation must have been anterior to his entering the hospital. Nothing particular in the abdominal viscera, except that the splenic portion of the stomach was considerably dilated, and the pyloric portion contracted.

Remarks.—When the patient entered the hospital he presented all the symptoms of pleuro-pneumonia, except the characteristic sputa, which were wanting, as sometimes happens. Active antiphlogistic treatment soon dissipated all the symptoms except the crepitating râle, which was still heard. Delirium then set in, which was met by venæsection, leeches to the neck, and revulsives to the lower extremities. To relieve this state, one hundred drops nearly of Rousseau's laudanum were administered, a mode of treatment oftentimes found beneficial where delirium comes on suddenly, in the course of another disease, in persons habitually addicted to ardent spirits. The result was favourable; the patient obtained calm sleep, from which he awoke with his intelligence quite perfect. All fever also disappeared; he now seemed convalescent. Again, however, without any known cause, the delirium and fever returned, and an opiate was again employed; but whether from its being given in too small a dose, or that the functional disturbance was now beyond the reach of opium, the cerebral symptoms continued to become worse, and, seven days after their re-appearance, the patient died.

It was not probably during these seven days that the morbid alterations in the meninges were formed. The pia mater had certainly been the seat of inflammation. Was it so, when the delirium ceased so readily after the first opiate was given? We know that opium has, under ordinary circumstances, the property of exciting cerebral congestion, or, at least, that it produces symptoms which are accounted for by such congestion. We know nothing positive regarding the nature of the lesion existing in the brain, or its membranes, on the first appearance of the delirium; nor is it necessary to believe, that congestion is necessary to produce such a symptom; as we know from the *post mortem* examinations of several who, during life, had the same symptoms as this individual, and yet no lesion was found to account for them. We think, that in such cases, there supervenes, in the nervous substance, a modification, whose anatomical sign escapes us, which precedes either the congestion, or the other alterations, which constitute the anatomical characters of encephalitis or meningitis. May not opium, which is mischievous when once the congestion is established, be then administered, inasmuch as, the brain not being in its normal state, the opium loses the power of producing congestion in it? We think it likely that, if the opium had been administered the second time in as large a dose as at first, on the re-appearance of the delirium, it would have again succeeded in removing the nervous symptoms.

CASE 13.—*Serous kyst developed in the pia mater—Great quantity of turbid serum in this membrane—Hemiplegia at the age of eight years, which completely disappeared at puberty—Atrophy and debility of the limbs formerly paralysed—Cancerous ulcer of the stomach.*

This was the case of a man seventy-two years old, who, at the age of eight years, was struck with paralysis of the limbs of the left side, which remained till puberty, and then gradually disappeared; these limbs continued, for the remainder of his life, much less developed and feebler than those of the opposite side. He also usually experienced in them a sensation of cold. For the last four years of his life his digestion became very much deranged, and he lost all appetite, and without any pain of head or any other part, he gradually wasted away, and died in a state of extreme emaciation.

Post mortem.—The sub-arachnoid cellular tissue of the convexity of the hemispheres was infiltrated with a considerable quantity of turbid serum, and on removing the membranes, the circumvolutions of the two hemispheres appeared farther separated than ordinary, by the great quantity of fluid filling up their anfractuosities. Near the great interlobular fissure, towards the middle part of the right hemisphere, there was found in the midst of the sub-arachnoid cellular tissue, a serous cyst, about the size of a small apple, which depressed the cerebral substance beneath it. An enormous quantity of frothy colourless serum flowed from the right lung when cut into. The mucous membrane of the stomach presented, at the distance of about three fingers' breadth from the pylorus, a rounded ulcer, about five inches in diameter, the edges of which, formed of mucous membrane, were of a livid red colour. In two or three places the parietes of the stomach were perforated by this ulcer, and the pancreas was exposed.

Remarks.—The serous kyst developed in the pia mater, was here no doubt the result of the lesion which had been in his early life the cause of the hemiplegia in this individual. There was no disturbance of the intelligence observed at any period of the patient's life, which circumstance may be accounted for by the slow manner in which the effusion took place *.

CHAPTER II.

DISEASES OF THE MENINGES OF THE LOWER SURFACE OF THE BRAIN.

CASE 15.—*Purulent infiltration of the pia mater covering the lower surface of the brain—Turbid serum in the inferior occipital fossæ—Delirium at the commencement of the disease; subsequently profound coma—Pulmonary tubercles.*

A tailor, twenty-seven years old, had been for three weeks in the hospital, with all the symptoms of advanced phthisis, when one morning we were struck with the indistinctness of his answers; in fact, he seemed as if drunk. The pupils were strongly contracted, and there was great febrile disturbance; on the following morning he presented the following state: head turned backwards, nor could it be brought forward, without eliciting screams from the patient; pupils very much contracted; makes no answers; occasionally raves; some froth at the mouth; teeth closed as in trismus; pulse more than one hundred and twenty; skin hot (two blisters to the legs). For the four following days the retroversion of the head, and the closing of the jaws, disappeared; the two pupils remained contracted; on raising the eyelid, we thought the sight quite gone; he seemed plunged in a profound sleep, scarcely drew back his limbs when pinched. Pulse now but of moderate frequency; skin not very hot, was almost constantly covered with abundant perspiration. The tongue never changed from its natural appearance. The coma however became more and more profound; the respiration became embarrassed, and the patient expired as in a state of apoplexy.

Post mortem.—We found the entire lower surface of the cerebral hemispheres covered by a thick layer of concrete pus contained in the pia mater; it was found in great quantity, particularly in the fissure of Sylvius, and around the *thalamus* of the optic nerves. Five ounces at least of milky serum were effused between the cranium and lower surfaces of the cerebellum. Numerous tubercles in different states existed in the lungs.

---

* The fourteenth case given by Andral resembled the above very much, with respect to the anatomical lesions found in the encephalon, except that instead of one, there were several kysts discovered. Yet the symptoms differed considerably, the intelligence being the function disturbed in the latter case, whilst the power of motion was affected in the other. May this diversity of symptoms, he asks, be explained by the difference in the intensity of the pressure to which the brain was subjected in the two cases?—T.

Remarks.—One could not have announced from the symptoms during life, that the membranes at the base of the brain were the exclusive seat of the disease, as nearly similar symptoms were observed to exist in cases where the meninges of the upper surface were engaged. MM. Parent du Chatelet, and Martinet have given coma as the distinguishing characteristic of meningitis of the base. But this symptom has been observed in cases where the meninges of the convexity were affected. The absence of headach could not be accounted for by the seat of the affection, as the same absence was observed where the membrane of the convexity was the seat of inflammation. Neither can the contraction of the pupils be converted into a sign, as in diseases precisely similar, both in their seat and apparent nature, the pupils have been observed sometimes considerably dilated, sometimes strongly contracted, and sometimes in the natural state; and occasionally contracted on one side and dilated on the other. Acute meningitis is very rarely observed to accelerate the death of phthisical patients. Some of them, to be sure, become delirious a little before death; but no lesion of the brain or its membranes has been detected to account for this symptom.

CASE 16.—*Intense headache with vomiting at first—Tendency to sleep, and disinclination to move—Gradual establishment of coma—Natural state of the pupils—Purulent infiltration of the pia mater of the base of the cerebrum and cerebellum.*

A labouring man, of middle age and strong constitution, on entering the hospital complained of nothing but violent headach, which commenced five or six days previous, and was for the first two days accompanied with a painful vomiting. The temples were the seat of the pain; they seemed as if compressed in a vice; at intervals he felt acute lancinating pains either at the temples or the occiput, and occasionally the back of the neck became so painful that the patient could not move: he then presented all the symptoms of wry-neck—he felt easy only when perfectly at rest; appetite gone; and what he ate, he said, gave him no strength; since the invasion of the headach had been but once at stool. We saw him first on the 3rd of July, when he presented the following state:—Face pale and dejected; look quite vacant; eyes very sensible to strong light; intelligence clear; pulse and skin natural. The headache the only important symptom in this case; (bleeding to sixteen ounces; sinapisms to legs; purgative lavement); the blood formed into a soft coagulum, with little serum, and no buff. 4th July. He complained aloud of the violent pain of head; he fancied his skull beaten in as it were with a hammer. Still his forehead was cool, and his face paler than the day before; the pupils, intellect, circulation, natural. Thus the bleeding produced no diminution of the headach.—(a second bleeding). On the 5th thirty leeches were applied to the neck. On the 6th headach less; but he answers questions with difficulty; he lies on his back and remains motionless, and resembles a person going to sleep, or whose eyelids are struggling against sleep. He still retains his intelligence, but appears to use it in spite of him; countenance very pale; features drawn, and as it were fatigued. (Two blisters to the legs.) On the 7th he appears in a profound sleep, will not answer questions; when bid he puts out his tongue readily, which still remains white and moist. On being pinched he shows that he still retains all his sensibility; pupils sensible to light; pulse sixty; heat of skin natural. 8th and 9th. Profound coma; he refuses to open his eyes, and appears not to hear the questions put to him; pupils natural; some sensibility still retained (strong sinapisms to the lower extremities). On the 10th. Coma still; complete loss of sensibility; yet, notwithstanding this annihilation of the functions of relative life described by the ancients under the name of lethargy, the functions of organic life still perfect; pulse, temperature of skin, and respiration, natural. On the 12th, for the first time, the respiration appeared affected; sometimes very much accelerated, at other times so slow that the respiratory movement just made, seemed not likely to be succeeded by another. On the 13th. Respiration still accelerated; in the course of the day the tracheal rale set in, and the patient died in the night.

Post mortem.—The upper part of brain and meninges being minutely examined, no morbid appearance was detected; but on examining the lower surface, the pia mater covering it was infiltrated with a purulent layer from seven to eight lines thick.

Chest.—Lungs very much engorged, as the lungs of apoplectic patients, or of animals who die a certain time after a division of the pneumo-gastric nerves; the right cavities of the heart distended with clots of considerable consistence; the left cavities empty.

Remarks.—In this case and in the preceding the lesions found in the dead body were similar, and had the same seat; yet, how different were the symptoms in both cases! In the latter case, the seat of the headach was far removed from the place where the autopsy detected the lesion. The several bleedings seemed to exercise no influence on the pain of the head; a little after them, the patient, without any previous disturbance of intellect, fell into a state of coma, which became every day more and more profound. Up to the end the pulse continued natural, and it was only towards the termination that the respiration became disturbed, and death seemed the immediate result of the disturbance of this function. The slight disturbance of digestion was but sympathetic. The vomiting, which showed itself at the same time as the pain of head, seemed of the same nature as that which so frequently accompanies the acute hydrocephalus of children, depending equally on disturbance of the nervous centres. The constipation observed in this case is an ordinary symptom when the brain is affected.

CHAPTER III.

DISEASES OF THE MENINGES COVERING THE PARIETES OF THE VENTRICLES OF THE BRAIN.

The cellulo-vascular web extended over the parietes of the lateral ventricles is not visible in the natural state, but becomes so from the effects of disease. Over these parietes may be observed at times large veins filled with blood. We thought this venous engorgement coincided pretty often with a greater or less collection of limpid serum in the cavities of the ventricles. We never observed on the surface of the parietes of these cavities a fine injection similar to that which appears often on the pia mater around the brain. In more than one case we found, in the interior of the ventricles, either limpid serum in great quantity, or even a milky fluid, pus, membranous flocculi, like those of the peritoneum and pleuræ; and in those different cases where there existed within the ventricles so remarkable an alteration in the secretion, the membrane furnishing the morbid product did not itself present any appreciable alteration. These ventricular meningeal inflammations are very seldom found to exist separate; they most frequently coexist with meningitis of the base or convexity of the brain, and their symptoms are confounded with those produced by inflammation of the meninges of the other parts of the encephalon. The following cases may be interesting as rather uncommon instances of isolated ventricular meningitis.

Case 17.—*Sero-purulent effusion into the cerebral ventricles—Cystitis—Violent pain of head at the commencement, afterwards delirium, coma, tongue dry, retention of urine.*

A man, twenty-nine years old, a saltpetre maker, residing in Paris for the last eight months, generally enjoying good health, and regular in his habits, awoke on the morning of the 21st December with a violent headach, feeling of lassitude, aching of the limbs and anorexia. This state of general uneasiness continued during the following days. He still continued to work till the 27th, when, feeling himself becoming feebler, he kept his bed. On the 31st he entered the La Charité, when he presented the following state :—

Countenance pale, features drawn, and as if harassed, eyelids weighed down, air of stupor; violent pain of head, particularly at the forehead, and extending sometimes to the rest of the head; power of motion free; muscular strength still considerable; tongue red and dry; some thirst; disgust for every kind of food; slight pain in the epigastrium, constipation, pulse frequent and tolerably full, skin hot and dry, tumor in the hypogastric region formed by the bladder distended with urine.—(blood-letting, blister to one leg, purgative lavement). On the following day the state of the patient the same; no stool; the blood drawn presented a soft coagulum without buff. On the 3rd, prostration, and air of stupor increased; answers slow and difficult; constantly complains of headach; paralysis of bladder continued, which rendered the frequent introduction of the catheter necessary; tongue moist; pressing on abdomen caused pain, which might depend on the distension of bladder; still constipation; pulse still frequent and full (sixteen leeches to neck, twelve grains of Dover's powder, purgative lavement). On the 4th, no amendment; skin still dry; tongue red, and again becoming dry; the lavement had no effect; bladder very much distended (leeches again, and Dover's powder, lemonade, with a little wine added).

On the evening of the 5th became delirious, and on the following morning he uttered constant complaints; he said he no longer had pain of head; stupor more marked; tongue red and dry; one stool; urine very abundant, and still drawn off by the catheter. On the 7th. Acute pain of head; tongue quite dry; pulse frequent, and of considerable strength; skin dry and hot; thirst; delirium. On the 8th. Profound coma; eyes closed; mouth half open; answered no questions; felt pain when abdomen was pressed; when the skin of one of the extremities was pinched he drew it back, and face assumed an expression of pain. The two arms, when raised, fell back as inert masses; respiration occasionally high and hurried; then became slow, and the respiratory movements succeeded each other at long intervals. The respiratory murmur not blended with any rale, and its intensity not in proportion to the considerable raising of the thoracic parietes. Pulse one hundred and twenty, and the intervals of the pulsations unequal. Some subsultus in the tendons of the muscles of the fore-arm; great quantity of urine. In the course of the day the intermissions of the respiration became more and more considerable; at last it stopped altogether, and the patient expired.

Post mortem.—Several veins in the subarachnoid cellular tissue of the convexity of the hemispheres gorged with blood. On making an incision into the upper wall of each lateral ventricle, an immense quantity of milky serum flowed out, in which some albuminous floculi floated. On slightly touching the internal wall of each of the ventricles, from the ancyroid cavity to the anterior extremity of their inferior portion, the cerebral substance was found very soft for the space of one or two lines, and seemed as it were diffluent under the finger.

Thorax.—Nothing particular.

Abdomen.—A great quantity of liquids distended the stomach. We observed on its inner surface two red spots, one the size of a five-sous piece, and the other that of a twenty-sous piece. In the large intestine, veins were seen in considerable numbers in the mucous membrane of the cæcum. The mucous membrane of the bladder exhibited a bright red injection in its entire extent; and in several parts it was covered with a purulent exudation.

Remarks.—This case resembled in many points, with respect to the symptoms, certain cases of typhoid fevers, to be recorded in another portion of this work.

The tongue, which we found in its natural state in the cases preceding this, here presented that redness and dryness so common in dothinenterite; the countenance also presented that air of stupor so characteristic of exanthematous inflammation of the small intestine. There was no other cerebral symptom, properly speaking, except the delirium followed by profound coma, and even those two symptoms appeared only during the last two days. Pulse was constantly frequent, and the skin presented that dryness so often accompanying acute inflammation of the intestinal follicles, to which part, in fact, one would for many reasons be inclined to refer the seat of the disease, and the cause of the continued fever. Yet the post mortem disproved this; what we found being a sero-purulent effusion into the lateral ventricles, with a superficial softening of the cerebral substance of a portion of their parietes. We also found remarkable lesions in the bladder, its mucous membrane being every where red, and a purulent layer covering it. Was then the retention of the urine in this case connected with cystitis? or was the latter the result of the repeated introduction of the catheter? If we now recur to the commencement of the disease, we shall find that it began with headach, a symptom, the frequent, though not necessary existence of which we have also observed in meningitis of the base, as well as in that of the convexity of the cerebral hemispheres. This having been the first symptom, we had certainly some reason for suspecting the brain or its membranes to be the part affected, yet we could not have been certain of it, particularly when we recollect pain of head similar to this, to have ushered in and accompanied as the leading symptom, different cases of dothinenterite. Shall we take into account, in order to establish our diagnosis, the remarkable state of the respiration towards the close? Frank, in fact, has given, as one of the characteristic signs of encephalitis, those long intermissions of the respiration; in this disease, he says, the patient respires deeply, and at long intervals: *Spiratio magna ex longis intervallis ducitur.* But the same state of the respiration has been found in several cases of dothinenterite, without any appreciable lesion of the brain after death.

Case 18.—*Sero-purulent effusion into the lateral ventricles—Granular appearance of the membrane lining their parietes—Alternation of delirium and coma; of stupor and violent agitation; of abolition of muscular contractions, and strong tetanic twitches—Pulse occasionally rare and frequent.*

A lapidary, twenty-one years of age, was admitted into the la Charité, on the 20th of April, 1820. What particularly struck us then, was his air of dejection; he kept his head under the bed-clothes, and refused to answer questions; he merely told us that, for several days, he had over the entire abdomen, pains which were not increased by pressure, and that for a considerable time he had had no stool; pulse not frequent. The nature of the abdominal pains, the constipation and apyrexia, together with the circumstance of his being a lapidary, caused us to suspect lead colic. The ordinary treatment of the hospital for this affection was accordingly adopted.

On the 21st, skin hot; pulse frequent; the treatment of the preceding day discontinued. Diluent drinks prescribed.

From 21st to 26th, the fever continued; the air of sadness still remains; slight abdominal pains; constipation still; tongue natural (drinks continued; purgative lavement; linseed cataplasms over the abdomen).

On the 26th, patient lay on his back, his look being fixed; the two pupils a little contracted, the right less than the left; head somewhat turned back. He refused to answer questions, and talked incoherently; several times in the night he attempted to escape out of bed, so that restraint became necessary. Tongue natural; pulse frequent (two blisters to the legs).

On the morning of 27th, profound stupor; patient performs no motion whatever; abdominal pressure gives no pain; pulse lost its frequency; heat of skin no longer raised; constipation still continues.—(eight leeches behind each ear; two blisters to the thighs; mineral lemonade).

On the 28th, comatose state quite gone; he puts out his tongue when asked, but gives no other signs of intelligence; utters not a word; pupils a little dilated; tongue natural; no stool; apyrexia (purgative lavement, &c.).

29th, No change; but on the 30th agitation and delirium, as on the 26th; constantly rubbing his hands together; belly tympanitic; pulse not frequent; tongue moist and pale (twenty leeches to neck; twelve grains of calomel).

1st May, delirium continues; retroversion of the head; carphology; pupils dilated; pulse very frequent; abdomen tympanitic (twelve grains of calomel; frictions to the abdomen, with linim. ammon. camphor., and aromatic fomentations to the same part).

2d May, delirium continues, as also the carphology; continual tossing of the head alternately from right to left, and *vice versa;* moaning; sudden shocks of the trunk and limbs, like those of tetanus; carotids beat strongly; the heart raises the parietes of the thorax; tympanitis considerable. Death at eight o'clock at night, after discharging a considerable quantity of blood from the nose and mouth.

Post mortem. On a level with the centrum ovale of Vieussens, on each side of the corpus callosum, we perceive a manifest fluctuation; an incision made into the lateral parts gave exit to a considerable quantity of liquid, like whey not clarified, in the middle of which albuminous shreds are seen to float. From the surface of the parietes of each ventricle, a very thin membrane is detached, which is traversed by very minute vessels curiously injected. On some points of the free surface of this membrane, small greyish bodies exist, the size of a pin's head, like the rudiments of false membranes, which, under the form of granulations, are sometimes scattered over the peritoneum.

Thorax. The pleura costalis and pulmonalis adhere by well organised cellular tissue. The lung of this side contained a great number of tubercles, principally miliary, some were larger, and softened. The bronchi of this lung were very red, and the bronchial ganglia hard and black. The left lung also adhered to the pleura, but contained not a trace of tubercle. The two serous folds of the pericardium were internally united to each other by a false membrane several lines in thickness.

Abdomen. The anterior wall of this cavity projected considerably before the thorax; when struck, it sounded like a drum. The intestines were enormously distended with gas; stomach contained a great quantity of mucus, and the small intestine a great quantity of bile. In the cæcum and colon, ascending as well as transverse, the mucous membrane was very much injected. The left lumbar colon, filled with very hard fæcal matter, was white on its internal surface, as was the sigmoid flexure and the rectum; above this last intestine was a very marked circular contraction. The gases and fæces accumulated in the colon could with difficulty get through it; rectum empty.

Remarks.—In this patient the nervous symptoms were much more marked and varied than in the preceding. In both the cerebral lesion was of the same nature, and had the same seat. In the latter case, as in the former, the lesion discoverable by anatomy existed only in the lateral ventricles. With this inflammation of the ventricular membrane coincided different symptoms, some of which are generally regarded as characterising meningitis of the convexity of the hemispheres, and others more especially connected with meningitis of the base; thus on the one hand there was delirium and frequent tossing, on the other a state of coma. We often see these two orders of symptoms replace each other, and at the same time there are observed very remarkable disturbances in the muscular contraction, characterised by shocks of the trunk and limbs like those of tetanus, and a forcible reversion of the head. If we refer to the period when we first saw the case, we shall again find some phenomena worthy of remark, connected with the nervous system. The profound sadness of the patient then, that air of dejection, and disposition to conceal his head under the bed clothes, as if to avoid our look and questions, his reluctance to answer, &c., were certain indications of a commencing cerebral affection. This state of the patient prevented us, unfortunately, from procuring any information as to what he had suffered before he came to the hospital—as, for instance, whether he had had pain of head. The tongue was constantly natural; not so in the preceding case; and yet the primæ viæ were here affected; for at different times, and especially on entering the hospital, he complained of acute pain in the abdomen, and had most obstinate constipation. Had he the beginning of lead colic? We must not lose sight of the bright red appearance found in a great portion of the large intestine, and the accumulation of fæces in the sigmoid flexure, which a circular contraction of the commencement of the rectum prevented from passing into the latter intestine. This contraction depended on no organic lesion; it appeared to be the result of a spasmodic affection of the muscular coat.

CASE 19.—*Serous effusion into cerebral ventricles—Pain of head at the commencement—Subsequently coma—Acceleration of the pulse some hours only before death.*

A mason, twenty-three years of age, had been complaining for several days of violent pain of head, when he entered the hospital. Tongue white; pulse not frequent; no other ailment than the headach. Two grains of tartar emetic were given him. He vomited twice very copiously, and had two stools. The following day the state of the patient underwent a remarkable change. His intelligence very much diminished; he answered questions slowly and with difficulty. Still complained of the headach; pulse and tongue natural. (Twelve leeches behind each ear.)

On the 17th. Great stupor. On being very much solicited, he opened his eyes slowly, and looked around him with the most vacant stare. On being asked how he found himself, he answered, that he was doing very well. Pupils did not contract on the approach of a very strong light; they were not much dilated, the right a little less so than the left. State of pulse and skin natural. (Six leeches to each mastoid process; a pint of whey, with the addition of a grain of tartar emetic, and four drachms of sulphate of soda; two blisters to the thighs; frictions with linim: volat: cantharid: to the extremities.) 18th. Stupor continues; utters some unmeaning words; puts out his tongue when asked; pupils more dilated than on the preceding day, and equally so; pulse has acquired some frequency; tongue dry; bladder very much distended.—(a pint of whey, with a grain of tartar emetic, and an ounce of sulphate of soda; frictions with linim. ammon.). During the day the coma increased, and he died during the night.

Post mortem.—The two lateral ventricles were found to be very much distended with limpid serum; some was also found in the third ventricle. Nothing remarkable was observed in the other cavities.

Remarks.—The symptoms here did not differ much from those in the seventeenth and eighteenth cases, in which pus was found to fill the ventricles. There was no febrile excitement at all in the course of the disease, and it was only a few hours before death that the pulse became accelerated.

CASE 20.—*Copious serous effusion into the lateral ventricles—Destruction of the fornix and septum lucidum—Symptoms of apoplexy.*

A man, fifty years of age, entered the La Charité with considerable anasarca and ascites; no local sign of organic disease of the heart; respiration free; states that he never felt any pain in the right hypochondrium; the dropsical effusion took place three months previously, but we could not learn from him where it commenced; digestion well performed; no new symptom presented for the fifteen days following. One morning, on approaching his bed, we found him in a state of apoplexy, totally deprived of consciousness. We were told that since the evening before he had not spoken: face pale; eyes appeared deprived of sight; both pupils sensibly dilated; the extremities when raised fall as inert masses; total insensibility; pulse not frequent; respiration hurried and stertorous; tracheal rale very loud. He died some hours after the visit.

Post mortem.—Considerable serous infiltration of the upper and lower extremities.

Cranium.—A small quantity of limpid serum infiltrates the subarachnoid cellular tissue of the convexity of the brain. The two lateral ventricles were confounded with the third into one enormous cavity, from which there flowed two glasses full, at least, of serum clear as spring water. In the place of the septum lucidum and fornix, there was nothing but small fragments of a white pulp floating amidst the serum.

Thorax.—Lungs very much engorged; in other respects sound. In the heart, which was natural in every respect, and in the rest of the arterial system, there was found but a very small quantity of blood, remarkably liquid. Some liquid blood, and that in small quantity, was all that was found in the veins.

Abdomen.—The peritoneum contained several pints of limpid serum. The liver, which was of the ordinary size, was remarkable for its great hardness—as also the spleen.

Remarks.—Here again we have a considerable effusion of serum into the ventricles, together with a breaking down of the central white parts of the brain. We are disposed to consider the destruction of the septum lucidum and the fornix as the mechanical result of the pressure made on them by the fluid in each ventricle. In the two cases preceding we have seen, notwithstanding the identity of the lesions found after death, that the symptoms were far from being similar. Here again we have the same lesions, and the symptoms were those of *apoplexy*, that species of it usually called *serous apoplexy*. Dropsy, of which the cause was obscure, was the only disease the patient laboured under up to the apoplectic attack; and, to account for this dropsy, we found no other lesion, except the morbid state of the liver. There existed already then, in this individual, a disposition of long standing to serous effusions; when suddenly, no doubt, the serous membrane, lining the cerebral ventricles, exhaled a large quantity of serum, which caused all the symptoms of real apoplexy. Thus we have sometimes seen in dropsical patients great dyspnœa suddenly supervene, and death follow after some hours the constantly increasing difficulty of respiration. It was accounted for by a serous effusion which took place all at once into both pleuræ. In the present case the anasarca and ascites did not diminish when the effusion into the cerebral ventricles took place. In another individual, whose history shall be given elsewhere, both the anasarca and ascites were considerably diminished before the appearance of the apoplectic symptoms, which, as in the present case, were produced by a sudden effusion of serum into the cerebral ventricles[*].

CASE 21.—*Considerable serous effusion into the lateral ventricles, with destruction of the septum lucidum and of part of the fornix—Ossification of the great falx Cerebri—Symptoms of apoplexy.*

A man, seventy-two years of age, entered the La Charité during the month of Dec. 1821. He had been for a long time labouring under pulmonary catarrh;

---

[*] A case somewhat similar occurred in Dublin, about three years since, under my own care. It was that of a man of very intemperate habits, whose liver was considerably enlarged; he had ascites and anasarca, and was treated in the usual way, without any amendment. One morning, when he awoke, he found the size of the abdomen very much diminished, and the swelling of the lower extremities quite gone. He arose from bed at twelve o'clock in the day, sat a few hours at the fire, became drowsy, threw himself on the bed, and when his wife went to call him, at about four o'clock in the evening, she found him dead. The ventricles of the brain were found to be enormously distended with limpid serum.—T.

for the last two months he kept his bed, being very much debilitated. When we saw him, he had some fever; tongue dry and brownish red; a little cough in very distressing kinks, accompanied with the expectoration of puriform mucus; intelligence perfect. He was ordered pectoral drinks, which he continued to use for fifteen days, when suddenly he lost all consciousness; his eyes closed; the four extremities lost the faculties of sensation and motion; sensibility gone; on raising the eye-lids we might touch the conjunctiva without his feeling pain; the pupils were dilated and immoveable; the pulse retained some strength and considerable hardness, but had lost its frequency; the skin was covered with a copious sweat; each inspiratory movement was accompanied with a loud tracheal rale. Death took place the following night.

Post mortem—Cranium.—More than an ordinary glass full of water filled both lateral ventricles; no trace of the septum; in place of the middle part of the fornix, we found a white pulp, which was raised with the scalpel from the upper surface of the choroid plexus. The great falx cerebri ossified.

Thorax.—Considerable infarction of the lungs. On cutting into them, a considerable quantity of frothy, colourless serum flowed from their tissue. Slight hypertrophy of the parietes of the left ventricle; numerous incrustations on the inner membrane of the aorta.

Abdomen.—A viscid mucous covers in considerable quantity the inner surface of the stomach; beneath it a bright injection of its mucous membrane towards the great cul de sac, as also of the small intestine.

Remarks.—This is a well-marked case of what is called *serous apoplexy* coming on in an old man, exhausted by chronic irritation of the gastro-pulmonary mucous membrane. In this, as in the preceding case, the patient lived but a few hours after the first symptoms of apoplexy, during which the pulse retained its hardness, but became very slow; the slowness depending on the serous effusion into the ventricles of the brain, and the hardness of the pulse on the commencing hypertrophy of the parietes of the left ventricle.

CASE 22.—*Sanguineous congestions in the brain, terminating in serous effusion into the lateral ventricles.*

A woman, fifty-one years old, of a sanguine temperament and strong constitution, ceased to menstruate about her forty-ninth year; during the six months following she was subject to a numbness in the right arm. In her fifty-first year she suddenly lost consciousness, fell, and retained, when she came to herself, some difficulty in her speech, with some falling of the commissure of the lips and tongue on the right side, considerable diminution of motion and sensation on this side, nausea and bilious vomiting. Under proper treatment this state disappeared at the end of four weeks. After this the patient returned to a perfect state of health, when, towards the middle of March, 1819, she again began to feel a little weakness in the right arm; slight pains of head in the frontal region soon supervened, and, on the 26th of April, without any obvious cause, there came on in the night, during sleep, a new attack, more violent than the former, and of the same side; total loss of speech; considerable diminution of sensation, but particularly of motion, in the extremities of the right side; features not altered; tongue fell a little on the right side. This new attack disappeared, however, more promptly than the preceding, and at the end of three days, the patient having entered the hospital, presented the following state:—She had slept well the previous night; some weight of head; tongue unsteady when she puts it out; some numbness and weakness on the right side of the body; speaks distinctly; pulse full, strong, and slow; habitual constipation (lemonade with cream of tartar; fifteen leeches to each foot; warm pediluvium; purgat. lavement). In the morning she took some soup, and was seized with vomiting in the course of the day, when she threw up some bile. The vomiting brought on a new attack, followed by an increase of the hemiplegia on the right side and greater embarrassment of speech. She was bled to ten ounces. New attacks of a slight nature appeared in the night, upon which sinapisms were applied to the feet: after this the fæces passed involuntarily. On the 30th, hemiplegia more developed; articulation nearly impossible; pulse less full, less hard, and more accelerated; paralysis of the bladder (lemonade with one ounce of soluble tartar; bleeding from the jugular vein; purgative lavements; introduction of the catheter). Immediately after the bleeding (ten ounces) a new attack, followed by total loss of speech, and of motion in the right extremities; frothing at the mouth; dilatation of the pupils; countenance quite vacant. On the following morning these symptoms were all aggravated; trismus also supervened, which prevented her from drinking, and constant drowsiness. On the 1st of May, pupils immoveable, blindness, trismus, frothing at the mouth at each expiration,; contractility abolished on the right side, almost none on the left; a little sensibility on both sides, rather more on the left; pulse full, hard, irregular for the number of pulsations (twenty leeches to the neck; blister to legs; purg. lavements). She died a little after the visit.

Post mortem—Cranium.—The lateral ventricles contained nearly four ounces of limpid serum; no lesion in the thoracic or abdominal viscera.

Remarks.—The apoplectic attacks in this case seem to have been produced by simple sanguineous congestions in the brain. It would appear that here the hemiplegia was the result of a sanguineous congestion greater in one hemisphere than in the other, whereby this hemisphere lost its influence over the muscular contractility, even when the congestion ceased to exist. The first time the hemiplegia was preceded by a total loss of consciousness; the second time it was gradual, and not announced by any symptom of apoplectic attack. The more alarming symptoms observed for the last two days were the result of the serous effusion into the ventricles, of which the habitual sanguineous congestions had been probably a predisposing cause. We should not forget to notice here the influence of the vomiting on increasing the hemiplegia.

CHAPTER IV.

CASES WHEREIN THE ENTIRE OF THE MENINGES WERE INVOLVED.

CASE 23.—A man, fifty years of age, naturally of a strong constitution, having been very unsuccessful in his commercial speculations, came to Paris, where, after residing for some time, he became affected with general debility, which went on daily increasing. At last he entered the La Charité on the 11th Nov. 1821. During the first two or three days he scarcely appeared ill in any way; but was plunged into a profound melancholy. On the 15th, he complained of total aversion to food; his tongue was covered with a thick yellow coat; abdomen free from pain; no fever. During the day he took twelve grains of ipecac. and vomited abundantly. On the following day he seemed better. On the 17th, however, the pulse had become frequent; tongue showed a tendency to become dry; he vomited his drinks; his bladder, distended with urine, formed a tumour above the pubis; he explained his state perfectly; he was still more sad and taciturn than usual (the urine was drawn off; linseed lavements). 18th. Same state of bladder; countenance exhibits great stupor; still the intellectual and sensorial faculties unimpaired; patient complains only of great debility; tongue moist and foul; no stool; pulse scarcely frequent; skin not hot.—(lavement of marsh-mallow with a scruple of camphor; frictions on the extremities with linim. volat. cantharid.). 19th. In the same state. 20th. Prostration greater; he lies on his back quite motionless, with his eyes turned up and fixed; he appeared indifferent to every thing passing around him; answers questions precisely, but slowly; pulse frequent; skin hot; tongue still moist (six leeches to the anus; camphor lavement, lemonade). On the 21st, for the first time, he complained of headach, without being able to point out its precise seat; though he answered questions, still his mind was disturbed at intervals; his eyes were constantly directed towards the roof of the bed, except when he was spoken to; tongue, which was very yellow, again showed a tendency to become dry; abdomen was tympanitic, and since the preceding day the fæces passed involuntarily—they were liquid; pulse very frequent and compressible (four leeches behind each ear; fomentation with camphorated oil of camom. to the abdomen; sinapisms to the lower extremities; infus. quinquin. &c.) In the course of the day the fæces passed involuntarily twice; raved all the night. On the 22d, stupor more marked; eyes, which were directed towards the roof of the bed, were occasionally closed; mouth half open; no answer could be elicited from him; tongue very dry, and a dark yellow; abdomen again soft; on pressing it strongly the respiration was very much accelerated; pulse ninety-eight, very small, and very irregular; the skin covered with an abundant sweat. On the 23d. eyes dull, features quite altered; pulse one hundred, and thready; skin still hot and moist; passed no urine for the last twenty-four hours. He died in the course of the day.

Post mortem forty-six hours after death—Cranium.—Considerable injection of the membranes over the entire convexity of the cerebral hemispheres. Towards the anterior extremity of the inner surface of these hemispheres, the arachnoid was raised on both sides by a purulent layer, which was displaced, but not removed, by passing the back of a scalpel over this membrane. The pia mater was infiltrated with pus through the entire extent of the fissure of Sylvius on the right side; a layer of this same liquid was found on the upper surface of the two lobes of the cerebellum. The upper wall of each of the lateral ventricles was very much raised, and presented an evident fluctuation. Each lateral ventricle contains, in fact, a greyish liquid, in the midst of which numerous flocculi float: these also accumulated in the lower part of the ventricles, form a thick layer which covers the cornu ammonis on each side. Some whitish laminæ were also found on the lower surface of the cerebral hemispheres. Thus surrounded on all sides by a layer of pus, the cerebral substance underwent no appreciable alteration, not being even injected.

Thorax.—Anterior part of the two lungs empty of blood, whilst the posterior portion was gorged with it. The left cavities of the heart empty; the right cavities contain a small quantity of liquid black blood. In the thoracic aorta is a fibrinous clot divested of colouring matter. The vena cava in the abdomen full of liquid black blood.

Abdomen.—The convolutions of the small intestine were distended with gases; the transverse colon also contains a great quantity of them. The stomach, which was covered by the colon and the liver, was distended with a mixture of gas and liquid in its splenic portion, whilst it was contracted in its pyloric extremity; the inner surface of the stomach of a brownish grey, through the whole extent of the great cul de sác; the duodenum, and two upper thirds of the small intestine, contained a great quantity of a yellow, viscid liquid, which colours very deeply the internal surface, and particularly the valvulæ. This portion of intestine, when washed, presents no appearance of injection. The lower third of the small intestine contains a greenish matter more liquid, but not viscid; its inner surface is pale, except in three places, where there is observed a deep red colour, the seat of which is in the mucous membrane. Here we found three patches forming a slight projection above the level of the rest of the mucous membrane, each of them being about the size of a five-franc piece. For the extent of four fingers above the ileo-cœcal valve, the mucous membrane was uniformly injected. The large intestine contains a greenish liquid ; its inner surface presents through its entire extent a slight injection of the mucous membrane. The liver is remarkably large ; it extends into the left hypochondrium, and is interposed between the abdominal parietes and the spleen, to which it is united by cellular adhesions ; its tissue is, in some degree, gorged with blood ; it presents a red ground, traversed by numerous white lines. Spleen large and very soft. The bladder, which is contracted, contains not a drop of urine, and its mucous membrane is injected, and on one part of it there is a small eschar.

Remarks.—The group of symptoms presented by this individual bear much closer resemblance to those appertaining to a severe dothinenterite, than to those connected with acute meningitis. On the dead body we found the latter very much developed ; but there were also indisputable, though very slight traces of a morbid state of the intestinal follicles. It was certainly on their inflammatory engorgement that those three red marks depended, which projected above the level of the intestinal surface, the existence of which we found not far from the cæcum. We may further observe, that this person had but recently arrived in Paris ; on the other hand, he had passed the age at which persons are usually attacked with dothinenterite. The moral causes which had been operating on him, seemed more particularly to have disposed him to a cerebral affection. In subsequent parts of this work, we shall meet more than one case in every respect analogous to this with respect to the symptoms, in which, however, the nervous centres presented no appreciable lesion after death. A question may be raised, whether this meningitis, so remarkable for its extent and for the quantity of pus effused into the pia mater and the ventricles, was not an additional phenomenon, or a complication, and whether it might not have been absent, and the disease still have retained the same form, observed the same progress, and been attended with the same severity? Several facts, which shall be stated in another place, warrant us in thinking that the question may be answered in the affirmative.

CASE 24.—*Thickening of the membranes on the convexity of the hemispheres, and at their base—Tubercles in these membranes, and in the cerebral substance itself, which is red and softened around them—Tubercular diathesis—Symptoms of apoplexy at the commencement and termination of the disease.*

A man, thirty-three years old, had experienced, five days before entering the La Charité, all the symptoms of an apoplectic attack ; the loss of consciousness continued for twenty hours. On the following days he continued paralysed on the right side ; then delirium supervened, and the patient was admitted into the hospital after having been bled three times from the arm. He then presented the following state :—Face pale ; delirium ; equal facility in moving the extremities of the right and left side ; pulse and tongue natural. On the day after, Feb. 23, the eighth day of the disease, the delirium still continues ; air of restlessness ; sinking of the features ; pulse hard, still not frequent ; tongue white and moist (sixteen leeches to neck). On the 26th, intelligence scarcely disturbed ; answers slow, but accurate (eight leeches to neck). 27th. Delirium returned ; pulse now for the first time has become frequent. 28th. Eight leeches across each jugular vein. On the 2d and 3d of March, delirium complete, with fever (twelve leeches to the neck each day). This state continued with very little change for the twelve days following, during which leeches were frequently applied to the neck, when, on the 16th, the patient suddenly fell into a state of the most profound coma ; at the time of the visit he seemed like a man who has just had a violent attack of apoplexy. He expired some hours after.

Post mortem—Cranium.—The arachnoid lining the inner surface of the dura mater readily separates from it ; the membrane covering the entire convexity of the cerebral hemispheres is opaque, very white, and several lines thick ; the pia mater is the principal seat of this thickening. On the lower surface of the left hemisphere, towards its middle part, we observe in the meninges opaque portions similar in appearance to the meninges of the convexity ; but here other peculiarities are also observed : these opaque portions principally exist in the intervals between three or four circumvolutions ; the anfractuosity, which should separate them had disappeared, and these circumvolutions closely adhere to one another. On the infiltrated and thickened pia mater which unites them, there are observed small whitish miliary granulations, of a tubercular appearance, set in order like so many beads. In the grey substance of the adhering convolutions, there appear several of these granulations ; around each of them the cerebral substance is very much injected and softened for the extent of some lines.

Thorax.—Similar granulations are also found in great quantity in the substance of the two lungs, and some also in the pleuræ.

Abdomen.—The inner surface of the stomach white, and slightly injected towards the great cul de sac ; a tumour, the size of a nut, projects on the interior of the stomach towards its great curvature ; when cut into it was found to consist of a sac, the raised mucous membrane forming its parietes, and the cavity being filled with softened tubercular matter ; this sac communicated with a large tubercular lymphatic ganglion attached to the great curvature of the stomach. The upper portion of the small intestine a little injected ; some tubercles were found between the peritoneum and muscular coat of the intestine ; the mesenteric ganglia very large. In front of the vertebral column there was found an enormous tubercular mass, consisting of the ganglia which exist ordinarily around the *reservoir de Pecquet ;* the same tubercular ganglia are found in the thorax all along the thoracic duct ; a large tubercular mass exists also in the fissure of the spleen ; other tubercular masses fill up the different furrows of the liver ; in the interior of the liver we observed several small round bodies, white, and of considerable hardness, presenting at their centre a yellow point ; similar bodies are found in the central part of the kidneys, but without the yellow point in their centre ; three or four of these bodies were also found in the pancreas.

Remarks.—This disease, after commencing with all the symptoms of an apoplectic attack, entirely changed its form. The apoplectic phenomena disappeared altogether ; not a trace even of the paralysis which followed the loss of consciousness remained. But another scene commenced ; and we behold most of those symptoms develope themselves belonging to the disease designated by Huxham under the name of slow nervous fever. On the part of the nervous centres, we detect no other functional disturbance, except that of the intelligence, and even that is not permanent. The disease, after lasting twenty-nine days, returned to its original form, and the patient was carried off in a few hours with the symptoms of apoplexy. The post mortem examination presented very remarkable lesions. The state of the meninges of the convexity of the cerebral hemispheres, accounts for the disturbance of the intelligence, but it does not explain the alternate increase and decrease of the delirium. The lesions at the base were of the same nature as those on the convexity of the brain. We must not lose sight of those red softenings scattered through the grey substance of some of the circumvolutions, and of those precisely whose investing membranes were also diseased. Was this part of the brain the seat of the apoplexy, in which the disease terminated ? This appears so much the more probable, as the paralysis was on the right side, and it was at the base of the middle part of the left hemisphere that these softened points existed. But why did the symptoms of apoplexy disappear ? Why did the paralysis cease ? No doubt, because the cerebral lesion, being at first but slight, disappeared of itself. But by reason of the disposition to tubercular secretion existing in this individual, tubercles took the place of the blood that had been effused into the cerebral substance, whilst they were also deposited in the cerebral membranes. At a later period, no doubt a new inflammatory process took place around each cerebral tubercle, and thence perhaps the new attack of apoplexy which carried off the patient.

CASE 25.—*Pain of head of very long standing—Suddenly delirium; then coma—Symptoms of apoplexy and death—Purulent effusion on the convexity of the cerebral hemispheres, at the base of the brain and into the ventricles—Old cellular adhesions of the two folds of the arachnoid—ossification of the retina.*

A shoe-maker, thirty-eight years of age, of strong constitution, deprived of the left eye from his infancy, was troubled all his life with pains of the head, the seat of which he usually referred to the left side of the cranium; fourteen months previous he received some violent blows on the head in a fight, since which occurrence his headachs became more frequent and more severe; he often feels a dizziness. On the 13th June, after his work, he complained of general illness, and of a more violent headache than ever over the left side of the cranium; during the night he became very feverish. On the 15th he was bled. On the 16th, some delirium at intervals. On the 17th, constant stupor (a blister was applied to nape of neck). On the 18th he entered the La Charité, and on the 19th (the seventh day of his illness) he presented the following state: face pale; eyes shut; appearance of tranquil sleep, from which it is almost impossible to arouse him; when he does open his eyes he looks around him with a stupid air, utters not a word; power of motion perfect, but sensibility diminished; passes his fæces under him.—(one ounce of sulphate of soda, sinapisms). On the 20th, No change. 21st. Pulse accelerated; heat of skin very much raised; still comatose; subsultus in both arms; bled from the arm; blood covered with a thick coat. On the 22nd new symptoms were observed; left eye-lid remained depressed over the eye; the right eye, on the contrary, wide open, fixed and dull; pupil of this side dilated and immoveable; at each expiratory movement the left cheek was pushed out, announcing commencing paralysis of the muscles of this side of the face. The right arm, when raised, fell again as an inert mass; subsultus in the two fore-arms. Pinching the skin gives not the least pain; respiration stertorous; pulse frequent and strong; skin covered with sweat. In the course of the day the coma became more and more profound, and the respiration more difficult, and at five in the evening he died.

Post mortem—Cranium.—Cellular adhesions, similar to those often uniting the pleura, extended from the arachnoid covering the hemispheres, to that lining the dura mater. The pia mater, in the upper surface, very much injected. The lateral ventricles were distended by a great quantity of a whey-like liquid. The meninges of the brain were generally injected. A thick purulent layer, which was seated in the pia mater covered the left cerebral peduncle, the left portion of the medulla oblongata, and extended, like a sheath, over the nerves arising from this part. Nothing remarkable in the thorax or abdomen.

Examination of the left eye.—The transparent cornea was thick and opaque; the opening of the iris was completely obliterated by a white membrane several lines thick, the edge of which adhered to the circumference of the iris; no longer any trace of the crystalline lens. The vitreous humour had a milky appearance. Not a trace of retina, but in its place we found a small bony shell, having a small hole in the centre; its concave surface was applied to the corpus vitreum; no vestige of the ramifications of the optic nerve was discovered on it. The left optic nerve was smaller than the other, and of a grey colour, from the sella turcica to its entrance into the eye; it terminated at the central hole in the bony shell above described, by a but (*bouton*) apparently fibrous, and similar to the swelling found in the extremities of nerves in amputated limbs. From their origin to their crossing the two optic nerves were perfectly similar.

Remarks.—In this individual two species of alteration were found within the cranium, and all two had their share in the production of the symptoms. The one of these alterations was of a long standing, namely, the cellular adhesions uniting the two layers of the arachnoid. It is very probable, that on these depended the headachs which so long annoyed the patient. Anatomy, however, does not inform us why the pain of the head was more severe on the left than on the right. The exasperation of this pain of head, marked the commencement of the acute disease, for which he entered the hospital, and which was sufficiently accounted for by the purulent effusions found on the upper surface of the brain, its base, and in the ventricles. We may observe, that the purulent layer of the base was confined to one of the cerebral peduncles, the left, and also to the left pons varolii and medulla oblongata. We may also observe the purulent sheath, surrounding the nerves, arising from the left side of this part of the brain. Is it in consequence of these anatomical circumstances that, towards the termination of the disease, the left eyelid, and cheek of the same side, became paralysed, at the same time that all motion seemed extinct in the right arm? Violent pain of head, fever, general illness, were all that we observed during the first days of the disease. Some delirium set in on the 4th, which, on the 5th, was succeeded by a state of coma, which went on increasing to the 10th day, when he died, a little after symptoms of paralysis appeared. To explain this succession of phenomena, shall we say that the meninges of the convexity of the hemispheres were, at first, irritated, and that it was then the delirium appeared, and that the coma which succeeded this delirium, announced the extension of the meningitis towards the base of the brain and into the ventricles? We have already seen, however, that it is not always possible to determine, from the prevailing symptoms, what portion of the meninges is especially affected. The circulation did not present that slowness here which it did in other cases. The pulse, which was natural on coming to the hospital, became frequent and febrile, in proportion as the state of coma became more and more developed. We have observed the contrary in other cases.

CHAPTER V.

DISEASES OF THE MEMBRANES OF THE SPINAL CORD.

Case 26.—*Spinal arachnitis—Arachnitis of the base and convexity of the brain—Milky serum in the ventricles.*[*]

A woman, twenty-eight years of age, the mother of four children, had been very much distressed by certain insulting proposals made to her; her menses were suddenly suppressed in the midst of their course, and she was instantly seized with violent shivering, which lasted twenty-four hours. The next day, great heat of

---

[*] The following very interesting cases, which serve to illustrate the principal circumstances connected with disease of the upper cervical vertebræ, are condensed from Dr. Bright's Medical Reports, vol. ii. part 1, page 415. They were communicated to him by Mr. Key:—

Case 1.—*Slight Paralysis from disease of the Cervical Vertebræ.*

A young lady, aged thirteen, had been for about twelve months troubled with pain in the neck, which at first was considered as the effect of a cold. This not going off, was treated by her medical attendant as a glandular affection. This pain continued to increase, until at last she could not rise from the horizontal position without great pain, being also obliged to support her head by placing her hands on each side. When Mr. Key first saw her, she was emaciated, and her countenance betrayed great suffering. On examining her neck there appeared a general fulness, which gave her pain on pressure; she had the power of slightly moving the head backwards and forwards, but the lateral movement was accompanied with so much pain that she could not be prevailed on to attempt it. The case seemed evidently an affection of the two upper cervical vertebræ. After some time a tumour was perceived at the back of the pharynx, which, on puncture, yielded about three ounces of pus, and which Mr. E. concluded skin; burning thirst; a sense of squeezing at the throat; bolus hystericus very marked. On the third day, bilious vomiting; she vomited also whatever drink she took. On the fourth day, still vomits; hysterical symptoms gone; she entered the hospital in the evening, and on the following morning presented the following state:—fifth day, countenance very much flushed; eyes very bright; neck swollen; head turned back and flexed laterally, could not be inclined forward without causing great pain; constant pain extending along the vertebral column, from the great occipital foramen to the sacrum; the least movement causes the patient to scream from pain; pain not increased by pressure; respiration embarrassed, and panting; pulse frequent; skin hot and dry; tongue natural; had no stool for the last forty hours (fifteen leeches to the anus; purgative lavement; mustard pediluvia; demulcent drinks; soothing frictions over the spine). Sixth day, pain less (blister to the nape of the neck; twenty-four leeches behind each ear). Seventh day, sleep disturbed; increased sensibility of the head and back; tetanic rigidity of the back of the neck and trunk; countenance pale and expressive of pain; respiration more painful than before; pulse the same (bleeding from the arm; blister to the sacrum; sinapisms to the legs; assafœtida lavement). Three minutes after the bleeding, the blood was buffed and cupped; at the end of an hour, the patient very much relieved in every respect, and the bleeding was repeated. Some delirium on the eighth day, when she was bled again. On the ninth, the blood drawn exhibited the same inflammatory appearance as that of the two first days; pain of head and back more intense; features sharpened and very much changed; answers to questions slow and painful.—(twenty-four leeches along the vertebral column; laxative lavement). At four o'clock in the evening, she no longer answers questions; constant moaning; subsultus tendinum; pulse small and frequent; respiration short. On the tenth day, cold and clammy sweat over the face; all the other symptoms were aggravated, and she died at noon.

Post mortem.—The spinal canal was opened for its entire extent, and on cutting into the dura mater we found a layer of whitish, opaque, membranous matter extended over the spine, from the great occipital foramen to the sacrum; on pressing it with the finger, a turbid liquid, mixed with albuminous clots, are made to flow into the cranium; on drawing the scalpel over this membranous layer, the instrument slides on and takes up nothing, which seems to indicate that there is a membrane above this layer; dissection soon proves it. On detaching the arachnoid from the inner surface of the dura mater, we discover that the diaphanous membrane, covering the purulent layer, is but a continuation of it; it is evidently the portion of the arachnoid which, under ordinary circumstances, covers the pia

---

had communication with the diseased spine. This gave some relief; but her emaciation and suffering increased. About a fortnight before her death, vomiting came on whenever she took food, which was allayed by a blister applied in the course of the par vagum in the neck; she had convulsive twitchings of the upper extremities, and a slight paralytic affection of one arm. She sunk gradually.

The second case was that of a young man, aged twenty-three years, who seemed to labour under an affection similar to the last, with a strong tendency to phthisis. Connected with the disease there appeared a tumour in the neck on the right side, just behind the angle of the jaw, which projected into the pharynx; on puncturing this, a quantity of pus escaped, which gave great relief to his breathing and to his pain. The tumour formed again in four days after, and burst, and it does not appear that it gathered afterwards; the external tumour disappeared. He complained of some soreness low down in the œsophagus in swallowing; there was a slight lateral protrusion of the second vertebra.

The third case was that of a young man, eighteen years old, who complained of great stiffness with swelling at the back of the neck, which he had been complaining of for six months, and which was considered rheumatic. He could not rise from the recumbent position, nor move his head, without much pain; he gradually wasted away. He expired suddenly, in the act of being raised from his pillow; probably from the anterior ligament of the processus dentatus at that moment giving way. A slight tendency to paralysis of the upper extremities was observed on the morning of the day he died.

mater, and which is here separated from it by a layer of pus. Here then the pus is found exhaled, not into the cavity of the serous membrane, but on the external surface of this membrane, in the cellular tissue uniting it to the pia mater. On the brain, the arachnoid and pia mater are very much injected towards the fissure of Sylvius. On the right side we find an albuminous concretion, similar to that which fills the vertebral canal; we also find another, still thicker, on the external surface of the right hemisphere, near the great interlobular fissure. Concretions similar to the preceding are found beneath the tentorium cerebelli, and a still greater quantity than elsewhere between the lower surface of the cerebellum and the base of the cranium. The lateral and third ventricles were very much distended by a great quantity of milky serum. Thoracic and abdominal viscera sound.

Remarks.—This case presents a combination of the different symptoms which characterise, in the most striking manner, acute inflammation of the membranes of the spine. Yet, at first, it did not commence by these symptoms: it might have even been taken for a simple neurosis, and probably it was then nothing more; we think that there are many cases of this kind, and that some inflammations are preceded by mere nervous disturbance, in which the disease then entirely consists; at which moment, narcotics have a marvellous power of dissipating the symptoms, but if it be allowed to proceed, it will soon change its nature; and those functional disturbances which, a while ago, were the expression of an affection merely of innervation, will afterwards be produced and kept up by an inflammatory process, where narcotics would be mischievous, and other means must be resorted to.

During this first period, which appears altogether nervous, those vomitings also appeared, which are so often connected with cerebral affections, mark their onset, and precede their characteristic symptoms. It is only from the fourth to the fifth day, after the appearance of these different symptoms, that the first phenomena, indicative of the nature and seat of the disease, disclosed themselves. The intelligence remained for a long time unaffected; whilst, on the contrary, sensation and motion became seriously altered. In none of the preceding cases have we seen anything similar to the acute pains felt all along the vertebral column, accompanied by some tetanic symptoms. Cerebral meningitis also existed; and it is not improbable that the inflammation ascended from the spinal canal into the cranium only towards the termination of the case. We are disposed to consider that the difficulty of respiration arose from the circumstance of the spinal cord, in which we include the medulla oblongata, being the special seat of the disease. The moral cause which brought on the suppression of the catamenia is an additional reason for our considering that the affection, in the first instance, was merely nervous.

Case 27.—*Spontaneous luxation of the first two cervical vertebræ—Hemiplegia.*

A man, thirty-five years of age, of a strong constitution, had always enjoyed good health, except that he twice had syphilis, for which he says he was properly treated. After having suffered considerably from pains in different parts of the body, in the left knee, in the region of the kidneys, and the left thigh, he was then attacked with pain in the left side of the head, which soon spread to the same side of the face; some time after he began to complain of his neck, the motions of which became very much constrained; about a month after this the patient discharged by the mouth a great quantity of pus. The medical man who saw him at this time thought that the purulent discharge came from an abscess which formed between the pharynx and vertebral column, and which opened into the pharynx. However, it ceased at the end of seven days; but from this period the patient's countenance changed rapidly; he wasted away; continued to feel pain in the left side of the neck, his head inclined over the right shoulder, and his face was directed towards the same side. Some weeks after, the fingers of the left hand became the seat of a pricking sensation; the day after they were, as it were, benumbed, and could not be moved without difficulty; the day following, the entire upper extremity of the left side was deprived of motion; next day he felt the lower extremity of the left side a little weaker than the right. He entered the hospital on the 10th of June, and presented the following state: lies on his back, head and face inclined to the right, without any sensible contraction of the sterno-mastoid muscles; lancinating pain throughout the left side of the head; left pupil not so much dilated as the right; conjunctiva of this side considerably injected; left eyelid hangs a little over the eye; vision equal on both sides; intellect sound; total loss of the contractile power of the left arm; its sensibility entire; perceptible diminution in the motions of the left lower extremity; tongue a little red. There was an issue in the nape of the neck, which was still retained. On the day after, the head having been a little deranged from its position during the dressing, and inclined somewhat to the left, as also the face, the two extremities of the right side instantly lost the power of moving; they recovered it the moment the head resumed its usual position. On the nights of the three following days, delirium set in, pulse frequent. Sinapisms were ordered. Two days after, at six o'clock in the morning, the patient was in the same state as on the preceding days; he conversed quietly with the other patients who were near him, and there was no sign as yet of his dissolution being at hand. At seven o'clock he suddenly lost the faculty of speech; his body was covered with a cold sweat, his respiration became remarkably slow, then stopped altogether, and he died at half-past seven.

Post mortem 25 hours after death. The brain being examined with the greatest care, presented no appreciable lesion in its substance; its ventricles were nearly empty; the external arachnoid was considerably injected. Immediately on separating the pons Varolii from the medulla oblongata, we perceived sanious pus of a reddish grey colour flow in great abundance from the great occipital foramen. The transverse ligament of the atlas which separates the spinal cord from the odontoid process, was entirely destroyed, and this process was in immediate contact with the cord, which being pressed by it, was transformed on that part into a soft pap. The entire process was rough and uneven. The superior articulating cavity of the atlas on the left side did not hold by any ligamentous connection or any capsule to the condyle of the occipital bone; both presented a dark rough appearance, and were bathed in an immense quantity of pus. The left portion of the posterior arch of the atlas was also carious. The inferior articulating process of the atlas, and the superior process of the dentata of the right side, were also separated from one another, and their surface were black and rough. Finally, the left portion of the anterior surface of the body of the dentata was equally deprived of periosteum, and presented numerous asperities; it was separated from the pharynx by a purulent collection of a dirty grey colour, which communicated with this passage by a fistulous opening, the orifice of which corresponded to the fourth cervical vertebra.

Remarks.—Let us now endeavour to connect the lesions found after death with the symptoms during life, and let us see how far the one may clearly explain the other. In the first place, it is evident that the purulent discharge which took place by the mouth, about two months before death, had the origin ascribed to it by the medical man who saw him at the time; it is probable that some pus flowed every day through the fistulous opening in the posterior wall of the pharnyx; but coming only in small quantities at each time, it passed probably into the stomach. It is again probable that the disease of the first two cervical vertebræ commenced long before it manifested itself by any well-marked symptom; but in proportion as this disease advanced, the different ligaments securing the connections of the occipital bone and the first two vertebræ, were destroyed gradually, and at last became totally disorganised. As soon as this destruction was carried to a certain degree, the displacement of the articulating surfaces was the inevitable consequence; thence compression of the cord by the luxated vertebræ. There was a luxation on the right as well as on the left. The inclination of the head and face to the right shows that the displacement took place principally on the left, at the atloido-occipital articulation; the paralysis also existed on this side. One day a momentary paralysis was noticed on the right side, in consequence of a slight change in the position of the head. This circumstance is easily accounted for, by supposing that in this change of position the diseased articulating surfaces of the right side came to ride one over the other. The permanent inclination of the head without contraction of the sterno-mastoid muscles, might have inclined one to suspect luxation of the vertebræ. The manner in which the head inclined over the shoulder, without the neck seeming to participate in this flexion, as happens in the natural movements, indicated that the luxation took place very high up. It must be admitted that at first the odontoid process underwent but very slight displacement. But a period arrived when, whether after some sudden movement, or in consequence of the destruction of the transverse ligament, the spinal marrow came to be compressed and disorganised by this process. This phenomenon may be referred to the time when the patient suddenly lost the faculty of speaking, and when his respiration became embarrassed: death supervened as soon as the disorganisation of the cord was such as to incapacitate it for the discharge of its functions. Some would connect the caries of the vertebræ in this case with the syphilitic attack under which the patient had previously laboured.

Case 68*.—*Phenomena obscure at the commencement of the disease—Constipation—Retention of urine—The fifth day, paralysis affecting the motion of the lower limbs, with morbid exaltation of the sensibility—Rigidity of the neck and trunk, accompanied with pains along the spine on raising the patient—The seventh day, the same phenomena in the upper extremities, but in a less degree—They became a little rigid—Symptoms gradually became more severe—Death at the commencement of the tenth day—Puriform exudation between the arachnoid and pia mater of the cord—Injection of the cerebral vessels—Turbid serum in the ventricles.*

A man, twenty-four years of age, of rather a strong constitution, entered the Hotel Dieu, the 19th of October, 1823, stating that he had been ill for the last five or six days. He complained of no particular part as being the seat of acute pain; his illness was general, but slight; still his countenance was expressive of suffering; his answers were slow; lips seemed to tremble as when a person is going to cry; no appreciable symptom of fever; heat of skin natural; no symptoms of gastro-intestinal irritation. He remained for two days without undergoing any change. He arose out of bed and walked through the ward, but not having passed any urine since entering the hospital (three days), the catheter was introduced; bladder very much distended. On the 24th Oct. (fifth day) M. Dance examined the patient more particularly; his countenance still expressive of suffering; seems always as if going to weep; answers slow and vague, when questioned regarding his state, about which he does not furnish any more information; bladder still distended; on raising the lower extremities he screams with pain, particularly on moving the right lower extremity; pinching felt equally in both limbs; sensation also perfect, but he cannot raise them; he cannot even extend them after they have been flexed; they fall back on the bed, as inert masses, if left to their own weight; they are deprived of motion but not of sensation. The vertebral region was then examined, which presented nothing unnatural; it was remarked that he could not replace himself on his seat; that he suffered on the least flexion of the spine, and that the neck was slightly retroverted; on attempting to incline it forward, it could be done only to a certain degree, and by causing the patient some pain; he was now very irritable. In the upper extremities motion and sensation underwent no change; pulse has some frequency and a little hardness; skin hot; tongue natural; no stool for the last five days; no rigidity nor convulsions in the lower extremities (venesection, lavements). On the 25th, same state; distension of the bladder; pulse frequent; skin hot; limbs painful when moved, particularly that on the right side; same state of countenance and slowness in the association of his ideas; same pain on turning the patient (another bleeding). On the 26th the same appearance; pulse now very small and more frequent; bladder still distended; urine fetid, turbid, and reddish, contains a gaseous fluid which is heard escaping by the catheter, which is blackened by remaining even for a short time in the bladder; blood last drawn buffed and cupped. In the evening state worse; pulse nearly extinct and very frequent; still the heart beats with considerable strength; lower extremities sensible, but cannot move, and are very painful when any one attempts to move them. This paralysis and morbid sensibility begin to appear in the upper extremities, which present a slight rigidity; trunk and neck rigid; countenance still expressive of suffering; answers slow but precise; tongue moist; evacuations from the bowels scanty. On the 27th same state; parietes of the bladder have now lost all contractility; upper extremities weaker; one stool (sinapisms to lower extremities). On the 28th, patient now much worse in every respect; the contractile power of the upper extremities weakened; they are half-flexed, and evidently rigid, as are the entire trunk and neck; head somewhat inclined backwards and to the left; right pupil more dilated than the left; respiration slow; motions of ribs incomplete; bladder still distended; escape of fetid gas with the urine through the sound; no stool. Died on the 29th, the tenth day of the disease.

---

* A few Cases of Spinal Meningitis are here added from Ollivier's Treatise on Diseases of the Spinal Cord. The numbers annexed to the cases refer to Ollivier's work.

Post mortem thirty hours after death.

Cerebro-spinal Cavity.—Marked injection and distension of the spinal vessels; membranes healthy; lateral ventricles very much distended, containing about three-fourths of a glass of serum, somewhat opaque; the other ventricles were also distended. The vertebral canal being opened through all its extent, we observe, external to the dura mater, in the cellular tissue surrounding it, a net-work of vessels injected with blood. This membrane seemed very much distended and immediately applied to the cord, which already indicated a particular development of the parts contained in it. The dura mater having been cut into through its entire length, the cord appeared covered by a gelatinous layer, slightly yellowish, four or five lines thick, which was applied immediately over the pia mater. This layer was very thick towards the lumbar enlargement of the cord, and there also the yellowish colour was deeper; it gradually diminished in thickness in ascending as far as the third or fourth cervical vertebra, where it ceased altogether; there was no trace of it on the cauda equina; it was less thick and less perceptible on the anterior surface of the cord than on the posterior surface. This gelatinous layer was situate between the pia mater of the cord, and the corresponding arachnoid reflexion; that which lined the dura mater was also covered with a very delicate false membrane granulated, and of little consistence. This puriform, concrete substance, subjacent to the arachnoid, was not liquid, whether by reason of its tenacity, or because it was contained in the meshes of the sub-arachnoid cellular tissue. The lower part of the spinal canal, beneath the arachnoid, contained four or five spoonfuls of opaque serum.

Thorax.—Lungs adhering at all points of their surface, by organised cellular bands of long standing; the right lung posteriorly, was evidently in the first degree of hepatisation; its tissue friable and gorged with blood; heart natural.

Abdomen.—Mucous membrane of the stomach plaited, grey, slate-coloured, and even somewhat blackish, for a considerable portion of its extent; in some parts it was studded with red dots, as if from ecchymosis; that of the intestines was very much injected, reddish, and the intensity of this colour, which occupied the lower fourth of the intestine, went on increasing as far as the ileo-cæcal valve; the mucous membrane of the bladder was thickened, reddish, slate-coloured, evidently inflamed, and filled with thick, fetid urine.

Remarks.—This case presents, in a manner, the complete history of spinal meningitis, and the symptoms of this inflammation were, as we see, conformable to the lesions found on the dead body ; the invasion of the disease was obscure ; the patient remained four days in the hospital before we were able to determine what his disease was. The first four days he arose out of bed and walked about the ward ; so that it is evident the locomotive powers were not affected till the fifth day ; up to that period, paralysis of the bladder and retention of urine were the only symptoms which could create any suspicion of lesion of the spinal cord or its membranes ; the functions of the intestines were at the same time destroyed, and constipation existed nearly from the commencement of the disease till death. Paralysis of the motive power of the lower extremities, with morbid exaltation of the sensibility, are the phenomena which then appeared, and to which were joined rigidity of the neck, inflexibility of the trunk, pains in the trunk and limbs on moving these parts. Such was the series of the symptoms which manifested themselves successively in the course of the spinal meningitis. Again, if we consider the peculiar appearance of the countenance, the difficult association of ideas, the slowness of his answers, which were noticed from the commencement, it may probably be supposed that the cerebral lesion preceded that of the membranes of the cord : so, in fact, it appears to me ; but the changes found in the encephalon, and which are also entirely conformable to the state of the cerebral functions during the disease, were not of a nature to have influenced the progress of the spinal meningitis ; they probably contributed to throw obscurity over its first progress. What makes it probable that they could not exercise any influence on the progress of the spinal meningitis, is, that the latter manifested itself by symptoms which proved its ascending progression, and its commencement in the lower portion of the cord. It may be remarked, that the neck becoming rigid, and the upper extremities losing their strength, were subsequent to the paralysis in the motion of the lower extremities. The muscular movements were abolished in the bladder, the intestine, and the lower extremities, whilst the upper extremities had lost but a portion of their motive power ; and the pseudo-membranous layer was found, in the dead body, much thicker inferiorly than superiorly, which seemed to indicate that the inflammation had been of longer duration, and of a less recent date in the former region. The pain felt by the patient on moving the limbs or trunk, may, perhaps, be explained by the slight dragging, or shaking, which the inflamed membranes of the cord then suffered ; the same phenomenon being also observed in pleuritis, where the slightest pressure increases the sufferings of the patient. The involuntary contractions of the vertebral muscles, which rendered the spine like an inflexible stock, seem also the result of those instinctive motions which we so often execute for the purpose of avoiding or preventing pain. The vertebræ, by becoming fixed one upon the other, prevented the spinal membranes from experiencing so much dragging. The morbid exaltation of the sensibility seems to be one of the characters of spinal meningitis.

According to Lallemand, the sensibility is not as often abolished as the power of motion, because the nervous centres are in two very different physiological conditions in the production of motion and of sensation ; they are active in the performance of the former, whilst for sensation they are merely passive ; they only receive the impression. The rigidity and semi-flexed state of the upper members observed in this case, support M. Lallemand's opinion, who considers convulsion and rigidity of the limbs as a symptom of inflammation of the coverings of the nervous centre. In this case, traces of inflammation were found in the lungs, stomach, and bladder. The state of the lungs may be easily accounted for by the difficulty of the respiration during the last period. The state of the stomach and intestines gave rise to no symptom, except we refer to it the burning heat of skin, and the great thirst. We are inclined to think that those inflammations so often met in these cases are the effect of sympathic re-action, and of the numerous connexions uniting the spinal cord to the respiratory and digestive organs. With respect to the cystitis, it was attributable no doubt to the decomposition of the urine, and to the irritation caused by the sound in the bladder. What was remarkable in this case, is, that the symptoms were continued, those painful tetanic contractions so characteristic in such affections, which come on at irregular periods, and are followed by more or less remission, not having been here at all observed.

Case 72*.—*Permanent tetanic contractions, accompanied with symptoms of cerebral meningitis—Death on the ninth day—Puriform exudation at the base of the left hemisphere, and in the middle of the dorsal region, under the arachnoid—Gelatinous infiltration of the cellular tissue, external to the spinal dura mater.*

A male child, between three and four years of age, was brought to the Hôpital des Enfans-Trouvés. The first symptoms were very great difficulty of deglutition; remarkable fixedness of the eyes, to which were soon joined tetanic symptoms: trismus, opisthotonos.—(repeated application of blisters behind each ear, sinapisms to the lower extremities, frictions, tepid baths produced no amelioration). The child was continually comatose. Died on the ninth day.

Post mortem. Cranium.—Cerebral substance very much injected and firm; the grey substance of a very deep colour; white substance of a pearly aspect, containing some injected vessels, particularly around the ventricles, which contained a considerable quantity of serum. Their lining membrane thickened and injected. That of the lower part of the left hemisphere was covered by a thin albuminous concretion, and the same membrane presented a very bright red injection on the convexity of the two hemispheres, and in some parts of the cerebellum.

Spine.—In the middle of the dorsal region, there was a reddish infiltration of considerable consistence, in the cellular tissue between the dura mater and the bony canal of the spine. On making an incision into the membranes, their cavity was found filled with serum: the vessels on the surface of the pia mater were very much injected, in the middle of the dorsal region only, where the arachnoid covered an albuminous concretion of about four inches in length. The substance of the cord a little more injected than natural.

Thorax.—The pleura pulmonalis of the right side adhered to the pleura costalis and to the diaphragm by a false membrane of some thickness, and not organised.

Abdomen.—The stomach, which was contracted on itself, contained some frothy mucus. The mucous membrane of the small intestines also was covered with a grumous whitish mucus. That of the large intestines was of an intense red colour, through all its extent. The mesenteric ganglia were very large, soft, and white. Liver pale.

Remarks.—The spinal meningitis, though circumscribed, contributed no doubt to cause the tetanic contraction of the trunk in this case; yet we must also take into account that the cerebral meningitis must also have exercised some influence in producing this phenomenon, it alone being in some cases sufficient to produce the retroversion of the neck. It is evident from this case that inflammation of the membranes of the cord may be confined to a portion of their extent more or less circumscribed; we shall presently see another case fully demonstrating this pathological fact. There was also found a gelatinous and reddish infiltration in the cellular tissue, external to the dura mater; and I shall here remark, that this change appears to be sometimes the sole product of spinal inflammations. The existence of thoracic and abdominal inflammation, which is so frequent a coincidence with affections of the spine, is to be set down as a consequence of the physiological and pathological relations connecting this nervous centre with the different apparatuses of organic life.

---

* Ollivier, vol. ii. p. 585.

Case 73*.—*Deep-seated pain in the lumbar region, after a violent effort; cerebral symptoms followed by debility, and partial paralysis of the limbs; urine and fæces discharged involuntarily—Death twelve days after the appearance of the latter symptoms—Effusion into the right ventricle; meningitis of the convexity of the left hemisphere; capillary injection, of about an inch in extent, beneath the arachnoid of the meningeal sheath of the cord in the lumbar region.*

A man, twenty-eight years of age, entered the hospital La Charité, April 4, 1823. He had been treated at the Saint Louis for a deep-seated pain which he felt in the lumbar region, after a violent effort to raise a load in September, 1822. A blister was applied over the seat of pain, which was very long in healing. On entering the La Charité, he complained of general debility; he was very much dejected, and considerably emaciated. On the 7th of the month, he presented the following symptoms:—extreme difficulty in answering questions, inability to articulate certain words; mouth slightly inclined to the right; face a little red; left arm weaker than the right; sensation and motion of the lower extremities natural; urine and fæces passed involuntarily.—(arnica, blisters to legs, purgative lavement). On the 8th, several stools, pulse slow; mouth straight, countenance pale; unable to articulate one word; motion of the left arm more difficult than that of the right.—(volat. linim. with tinct. cantharid. to be rubbed on the limbs). On the 9th, both arms move equably; loss of consciousness. On the 10th, deglutition impossible; he manifests some pain when his legs are taken hold of to dress the blisters; respiration frequent, not stertorous. Died at ten o'clock in the morning.

Post mortem (twenty-two hours after death). *External appearance.*—General emaciation; great rigidity of the limbs; chest flattened and narrowed.

Head.—Vessels of the brain gorged with blood, patches of a yellowish grey colour on the surface of the left hemisphere, formed by a concrete substance effused under the arachnoid; considerable serous effusion into the right ventricle.

Spine.—Whitish turbid serum (about an ounce and half) in the lumbar portion. On the right side a sort of ecchymosis, an inch broad, formed by a number of small capillary vessels injected, subjacent to the arachnoid lining the dura mater; the injection deeper in the centre; the arachnoid was neither thicker nor more opaque on this part, which corresponded to about the third vertebra. Its inner reflexion was separated from the pia mater of the cord, posteriorly only, by a frothy serum which diminished towards the upper part.

Thorax.—Some adhesions of the left lung to the pleura. Its inferior lobe presenting pneumonia in the third stage; pus escaped from it on making an incision; upper lobe filled with miliary tubercles in different degrees of softening. It crepitated however. Entire of the right lung adherent, crepitating, filled with grey granulations.

Abdomen.—Liver occupies the two hypochondria, concealing the stomach; it was gorged with blood. Veins of the stomach dilated. Small intestines presented some partial redness in their interior. Bladder dilated, urine deep-coloured, fetid, not ammoniacal; its mucous membrane pale.

Remarks.—The continuance of the pain in this case, and the relation existing between its seat and that of this isolated inflammation, incline us to think that the effort made to raise the heavy load had been the cause of it. The patient was in some respect cured of this when he entered the hospital, and died of cerebral meningitis. The turbid liquid found in the spinal membranes came probably from the cavity of the cranium, being a portion of that which distended the ventricles. The cases now given belong to acute spinal meningitis; and the symptoms, as well as the changes found after death, show what great influence the spinal cord possesses over the organs of nutritive life, in which we very frequently find evident traces of an inflammation, which was developed during the course of the spinal affection. But when the meningitis is chronic, its symptoms are less obvious, consisting merely in obscure pains of the back, with a feeling of restraint and fatigue in the limbs, and the attention is in general exclusively directed to the morbid phenomena which arise from the viscera secondarily affected, the true causes of which are too often misunderstood. Colouring more or less deep of the membranes, and a thickening of them are the ordinary anatomical characters of this chronic inflammation, which also usually leaves after it cellular adhesions between the arachnoid and pia mater, and between the two arachnoid reflexions.

---

* Ollivier, vol. ii., p. 589.

RECAPITULATION.

CHAPTER I.

LESIONS DETECTED IN THE MENINGES BY POST MORTEM EXAMINATIONS.

ARTICLE I.

Lesions of the Dura Mater.

Lesions in the dura mater are much more rarely met with than in the two other cerebral membranes. In the cases already detailed, there are two which present remarkable instances of tumours developed on the inner surface of the dura mater, one of them being seated in that portion of the dura mater which is in contact with the vault of the cranium, whilst the other was formed on one of the two portions of the tentorium cerebelli. These * tumours had a texture analogous to that of the dura mater itself. One of them was constituted exclusively of fibrous tissue. In the other there was mixed with this fibrous tissue a certain quantity of ossiform matter. Both these anormal products bore a strong resemblance to the fibrous bodies of the uterus. In the two cases, the nervous substance was rather wasted than compressed, where it was in contact with the tumours. In one of these cases we could not refer the disease of the dura mater to any appreciable cause. In the other case, it was after external violence inflicted on the occipital region, that the tentorium cerebelli became the seat of the osteo-fibrous vegetation already described. Here then is one of those cases wherein we must have recourse to the existence of a disposition altogether peculiar, in order to explain those infinitely varied lesions which one and the same cause is capable of producing.

One of our cases presented us with a considerable ossification of the great fold of the dura mater, known by the name of the falx cerebri; this is the part of the dura mater most frequently incrusted with calcareous phosphate. In two cases where it presented no trace of ossiform substance, this falx was transformed, for almost its entire extent, into a large plate of cartilaginous texture.

The very fine cellular tissue interposed between the proper tissue of the dura mater, and that of the arachnoid lining its inner surface, has presented to us some lesions worthy of remark. First, we have found in it those cartilaginous or bony plates mentioned above, and we have elsewhere † shown that the ossifications of fibrous membranes are much more frequently seated in the cellular tissue, immediately touching these membranes, than in their own proper tissue.

---

* These tumours are different from the fungoid tumours which appear to be connected with the arachnoid of the dura mater; they arise from the structure of the dura mater itself, with which they are intimately joined, and from which they are inseparable without tearing that membrane.—Bright, vol. ii. 663.

For a highly interesting case of tetano-epileptic convulsions, where a bony deposition was found in the falx, as reported by Dr. James Johnson, See Medico-Chirurg. Review, April 1835.

† Pathological Anatomy.

On one occasion we found the arachnoid separated from the portion of dura mater corresponding to the arch of the cranium, by small depositions of pus, between which the membranes appeared quite sound. These depositions were five in number, and existed only on the left side : each of them appeared as a white layer, from three to four lines thick, interposed between the arachnoid and dura mater. There was at the same time sero-purulent infiltration in the sub-arachnoid cellular tissue of the convexity of the hemispheres. We have never met a case of serum being effused between the arachnoid and dura mater.

ARTICLE II.

Lesions of the Arachnoid *.

The lesions of the arachnoid, as those of other serous membranes, are principally referrible to its products of secretion. This may be modified in different ways, though at the same time the arachnoid does not receive more blood than usual, and may not have undergone in its nutrition any appreciable modification.

It should not be admitted that the arachnoid has been the seat of a morbid secretion, except when the product of this secretion is found in its cavity. Now this case is itself much more rare than that in which the morbid product is found outside the arachnoid, in the cellulo-vascular tissue constituting the pia mater.

The morbid products found in the cavity of the arachnoid are the following :—

1. An effusion of clear, transparent serum. Such an effusion is very rare on the upper surface of the brain ; it is more common at the base, towards the occipital fossæ. 2. An effusion of turbid, milky serum, with purulent flocculi. We have seen but one instance of this sort in the great cavity of the arachnoid. 3. False membranes not yet organised, lining one or other of the free surfaces of the arachnoid. 4. False membranes of longer standing than the preceding, of serous organisation, extended over one or other free surface of the arachnoid. 5. Adhesions of a cellular appearance, similar to the bands of the pleuræ, and extending from one of the free surfaces of the serous membrane to the other. There are some cases in which, instead of any of these anormal products, we have found nothing but remarkable dryness of the arachnoid on the surface not adhering. It would appear that in such a case there had been, during the last period of life, a suspension of the exhalation of the fluid, which ordinarily gives to this membrane a certain degree of polish and moisture.

With or without these latter degrees of alterations of secretion, we have never observed in the arachnoid the least vascular injection ; neither have we ever seen in it either change of colour or thickening. It appeared to us that the cases wherein the arachnoid appeared at first view either coloured or thickened, were cases where there was lesion of the subjacent cellular tissue.

Whatever be the nature of the delicate membrane lining the inner surface of the ventricles, this membrane presents, in the pathological state, nearly the same lesions as the arachnoid developed around the brain, but the former are more frequently met with.

---

* The arachnoid and pia mater are so intimately connected as to be scarcely separable from each other, except at the base of the brain. . . . . The arachnoid of the adult in its healthy state is supposed to possess very little vascularity ; but its substance is so delicate, that the vessels of the pia mater are distinctly seen through it ; and when fluid is effused into the cellular membrane of the pia mater, some of the vessels appear evidently to lie on the surface of the fluid, as if they belonged to the arachnoid, and do not dip down between the convolutions. —Dr. Bright, M.R., vol. ii. p. 669.

It is much more common, for instance, to find serum effused in considerable quantity into the ventricles than into the great cavity of the arachnoid covering the convexity of the hemispheres. The presence of this serum in the ventricles should be considered as the result of a morbid process only when its quantity exceeds an ounce in each lateral ventricle. When it is very abundant, it raises the upper wall of the ventricle, and, on pressing gently with the finger, this wall presents a manifest fluctuation. In such case there can be no doubt but that the accumulation of serum in the cerebral cavities is a morbid phenomenon. We seldom find any perceptible difference in the quantity of fluid contained in each ventricle. Whenever this quantity was very considerable, we have found the septum lucidum and the fornix very much softened. In some cases we have seen the two laminæ of the septum lucidum separated by serum, and the cavity of the fifth ventricle thus become accidentally quite manifest.

Instead of limpid serum we occasionally meet in the ventricles a turbid liquid, in which are observed those flocculi, called albuminous, which constitute so frequent an anatomical character of pleuritis or peritonitis.

In some of the cases which came before us, we have seen the ventricles filled with a collection of real pus, which, by reason no doubt of its greater weight, was found accumulated in great quantity, principally at the lower part of each lateral ventricle, or in the ancyroid cavity.

In most of the cases where pus was found within the lateral ventricles, some was also observed at the same time in some points of the sub-arachnoid cellular tissue surrounding the nervous centres.

The membrane yielding these varied products, once presented to our view some finely injected vessels, which lined as a net-work the inner surface of the parietes of the ventricles. In all the other cases, in those even where pus filled the ventricular cavities, no appreciable lesion appeared in the membranes lining their parietes.

We do not, in fact, consider as an alteration of nutrition in this membrane, but as a product of morbid secretion, small granulations [*], which are sometimes seen scattered on the inner surface of the ventricular parietes, a remarkable specimen of which we observed in one of our cases.

ARTICLE III.

Lesions of the Pia Mater.

THESE have been much more frequently observed than lesion of the two other membranes. The lesions which this membrane has presented are the following:

1. Infiltration of its tissue by a clear, colourless, transparent serum. Sometimes this serum forms but a thin layer interposed between the arachnoid and the cerebral substance; sometimes accumulated in more considerable quantity beneath the arachnoid, it raises this membrane, and distends the cerebral anfractuosities.

2. Infiltration of the tissue of the pia mater by a turbid, milky liquid, and sometimes by real pus [†]. The latter has sometimes a remarkable consistence; it is as

---

[*] This is a result of inflammation of the surface of certain parts becoming scabrous, as if covered with fine sand; this appearance takes place in different parts, and is frequently very manifest about the foramen of Munro, or the peduncles of the pineal gland.—Bright, vol. ii. 692.

[†] This is an undoubted result of inflammatory action, filling the meshes of the pia mater with a semi-fluid substance of a colour much resembling pus; it is not effused upon the surface

it were intimately combined with the cellulo-vascular tissue within which it is formed; it is concrete like certain pseudo-membranes of the pleura or peritoneum.

3. A real state of scirrhous induration of the tissue of the pia mater. We once saw such a state; between the arachnoid and the circumvolutions of the cerebral hemispheres there was a layer of solid matter, of a bluish grey, from five to six lines thick. This layer existed over nearly the entire extent of the convexity of the two hemispheres.

4. Serous cysts* variable in size and number. These may, in proportion as they become developed, compress the cerebral substance more and more, and thus become, in a way altogether mechanical, the cause of different phenomena.

5. Cartilaginous, or osseous plates, which we have seen in one case cover, like a second arch, the anterior fourth of the convexity of one of the cerebral hemispheres.

6. Tubercles, sometimes few in number and scattered over a broad surface, sometimes numerous and collected together, and forming, by their union, homogeneous whitish masses, which, on the one hand, compressed the arachnoid, through which they were seen, and which, on the other hand, sunk deep into the circumvolutions, the tissue of which they compressed. In one case, where these tubercles were thus collected, the pia mater had, at the same time, contracted such intimate adhesions with the cerebral substance, that the latter was detached in large portions along with the pia mater.

It often happens that tuberculous matter is deposited between two circumvolutions, the interval between which it perfectly fills up. It then happens that the two portions of pia mater, covering each circumvolution, come to form strong adhesions to each other, and in such case, a cursory examination might incline us to think that it was in the parenchyma of the brain that the tubercular matter was deposited.

4. Adhesions.—These are formed between the portions of pia mater leaving the arachnoid in order to line the interior of an anfractuosity. Then this anfractuosity completely disappears, and several circumvolutions are observed as it were soldered together; they are so firmly united that they cannot be separated unless by tearing them.

In concluding this enumeration, let it be observed, that most of the lesions of which medical writers place the seat in the arachnoid, and which they consider as the anatomical characters of arachnitis, reside most frequently in the pia mater. In almost all the cases, for instance, where the convexity of the cerebral hemispheres was covered with a layer of serum or pus, this layer had its seat beneath the arachnoid; on passing the back of the scalpel over the latter membrane, the morbid product is displaced, but not removed.

Sometimes this product is so extensively connected with the cellulo-vascular tissue, interposed between the arachnoid and brain, that it cannot be displaced even by the process just now mentioned.

Every time we found tuberculous matter deposited around the nervous centres, in their enveloping membranes, it was not the arachnoid that appeared to contain this product of morbid secretion; it filled the meshes of the pia mater. We might say as much of the cartilaginous or bony concretions occasionally found in the form of grains, or plates, more or less extensive, around the substance of the brain or spinal marrow; here too it was the pia mater which appeared exclusively to be the seat of them, except in the case above noted, where these concretions were developed between the arachnoid and dura mater.

---

of the arachnoid, nor does it remain upon the surface of the brain but when the membranes are drawn off, it separates with them, leaving the convolutions quite exposed, and when an incision is made into the membranes, none of the yellow deposit escapes.—Bright, vol. ii. 674.

* These serous cysts appear to be placed between layers of serous membrane, or to be contained in adventitious membranes; they vary from the size of a pea to that of an orange; they are of a most chronic character, often give no symptoms by which their existence is even suspected, and are probably coeval with life, not only the brain, but the bony parietes being often moulded to their form.—Bright, vol. ii. 675.

In fine, it is in the pia mater also that we find those small bodies, commonly known under the name of *Glandulæ Pacchioni*, which, in some subjects, are found in great numbers towards the edge, which separates the upper part of the internal surface of each cerebral hemisphere, but the existence of which is far from being constant. We think, with several other persons, that these bodies, so improperly called glands, are a morbid product formed in the pia mater, and that they should no more be considered as a condition of the normal state, than should those cellular bands in the pleura, which, in consequence of their great frequency, some ancient authors have considered to be a physiological product. In fact, these bands have been designated, in old anatomical writings, by the name of ligaments of the pleura.

If we now come to consider simple redness, and the different degrees of injection which the membranes may present, we might still further confirm by our own observation what has been said by Chaussier and others; we should find that this redness, more or less bright, more or less extensive, has, ninety-nine times in a hundred, its exclusive seat in the pia mater, and that above the latter the arachnoid remains transparent and colourless.

However, whilst we admit that in the diseases designated by the name of arachnitis, or more properly meningitis, anatomy discovers lesions in the pia mater much more frequently than in the arachnoid; still, we should not assert, as some writers would do, that the arachnoid always remains unaffected. If it is not yet clearly proved that it has been sometimes found either injected or thickened, at least it is certain that morbid products have been found in its cavity. We have adduced cases where there were effusions in the cavity of the arachnoid either of serum or of pus; we have cited others in which cellular adhesions, similar to those of the pleura, united the two reflections of the arachnoid to each other.

The lesions which may exist in the pia mater, may occupy different parts of this membrane. They are found more frequently in the convexity of the cerebral hemispheres than in any other part. When traced over this convexity, we sometimes find them extended to the two hemispheres, sometimes they are confined to one. Thus, in several of our cases, we have seen the upper surface of only one hemisphere, of a more or less bright red colour, or covered with pus, while the other was pale and free from any trace of purulent infiltration, or any other lesion. Frequently too, it is not the entire of the upper surface of one of the hemispheres that is the seat of this lesion (whether injections or any other). It may occupy but a more or less circumscribed portion of this surface; and with respect to the different symptoms which may result, it is well to remark, that there are some cases, where there is found either simple redness, or purulent infiltration, precisely limited:—1st, To the anterior extremity of one or other hemisphere. 2nd, To its middle portion. 3rd, To its posterior portion. 4th, To its lateral parts. The anterior part of the hemispheres has appeared to be the most frequent seat of the partial meningitis.

We remember to have seen some cases wherein a bright redness existed simultaneously over the entire anterior extremity of each hemisphere; everywhere else the pia mater remained pale.

On the lower surface of the brain the same lesions presented themselves, but with more frequency, at least if we are to rely on what we have seen ourselves. There also the pia mater is seen diseased over a great extent of surface; sometimes, as in the convexity of the brain, some points only are found affected. In the latter case, the part where we have most frequently found purulent infiltration, is that which is around and posterior to the commissure of the optic nerves. Some pus is also observed occasionally within the fissure of Silvius. One of our cases presented to us the rather remarkable phenomenon of purulent infiltration, which existed only on one of the halves of the pons Varolii and medulla oblongata.

The pia mater covering the cerebellum, appeared to us much more rarely affected than the pia mater of the brain.

The pia mater of the spinal cord presents all the changes to be found in that of the encephalon ; but from our own experience, as well as that of others, we find that the pia mater enveloping the spinal cord is much less frequently diseased, than the pia mater enveloping the brain. According to our experience also, in most of the cases wherein the pia mater surrounding the spinal cord has become the seat of purulent infiltration, this same infiltration is also found in the encephalic pia mater. On the contrary, nothing is more common than to find the latter considerably altered, whilst the other is perfectly sound.

With respect to the relative frequency of the lesions of the different parts of the encephalic pia mater itself, we find that the lesions of the pia mater of the convexity of the hemispheres, exist more frequently alone than the lesions of the pia mater of the base. In most of the cases where we ascertained an alteration in the latter, we found it either in the ventricles, or on the convexity of the hemispheres.

Diseases of the membrane lining the inner surface of the ventricles, have not appeared to us necessarily connected with diseases of the pia mater surrounding the brain, either at its base or convexity. We have accordingly adduced some cases in which the ventricles were filled with pus, or considerably distended by serum, without any appreciable lesion existing in the external pia mater, nor in the other parts of the arachnoid.

All possible varieties of alteration of the membranes may exist without the cerebral substance itself participating in any way with these alterations. In most of the cases reported this substance was perfectly untouched. But at other times we found it changed together with the meninges. Thus, in some cases where the inflammation was principally seated in the part of the meninges covering the convexity of the hemispheres, we, not rarely, find the grey substance of the circumvolutions injected and softened ; this substance is then raised like a pulp, when we try to separate the pia mater from it. Sometimes we find no morbid alteration at a greater distance down, and sometimes the entire medullary substance of the hemispheres presents on each slice a great number of red points, which are the divided orifices of so many vessels gorged with blood.

In some cases, where the sub-arachnoid cellular tissue contained a great quantity of serum, we were struck with the species of œdema, of which the cerebral substance was itself the seat. On slicing this substance, and pressing it between the fingers, a serous liquid was expressed from it similar to that infiltrating the pia mater*.

Every time we found in the ventricles serum sufficient to distend them perceptibly, so that their upper wall presented an evident fluctuation, we were struck with the great softening of the central white parts of the brain—namely, the septum lucidum and fornix.

In one case which we have reported, and where the ventricles contained pus, another species of softening existed ; it was seated in the most superficial part of the cerebral substance which forms on the outside the wall of the lateral ventricles.

In these different cases, the alteration of the nervous substance seems to be a simple complication of the lesion of the membranes. There are other cases, on the contrary, where it is the meningitis that complicates the affection of the parenchymatous substance. Thus, for instance, in certain cases of exclusive softening, which commence quite near the periphery of the brain, we find a partial meningitis, whose limits are marked by the limits of the cerebral softening.

---

* This cerebral œdema is the only alteration we met in an individual, whose body we lately examined, and who, about fifty hours before death, had fallen suddenly, deprived of consciousness and motion. He died with all the symptoms characterising a violent attack of apoplexy. This was serous apoplexy.

CHAPTER II.

DISTURBANCES OF FUNCTION.

These disturbances are of two kinds: some are referrible especially to the functions of relative life, and serve in a particular manner to characterise the disease; others relate to the organs of nutritive life, and though they may be less characteristic than the former, they are not however void of importance in establishing the diagnosis. We shall now pass them both in review.

FIRST ARTICLE.

DISTURBANCES IN THE FUNCTIONS OF RELATIVE LIFE.

SECTION I.

Lesions of Sensibility.

These lesions have as their seat, either the membranes themselves, or the different parts which receive nerves from the cerebro-spinal axis.

Similar in this respect to the different fibro-serous membranes, the meninges make known most of their alterations by a greater or less exaltation of their sensibility, whence arises pain of head, which becomes one of the most important symptoms to be considered in the history of meningitis. We shall first set about determining what is the degree of frequency of this symptom, in diseases of the meninges.

Out of twenty-eight cases of affections of the cerebral meninges which we have reported, we find sixteen in which the headach existed, and twelve in which this symptom was not observed; but in these twelve, there was one (case 5) in which the patient was not minutely watched, and another (case 11) in which the delirium having existed from the commencement, the pain of head could not be complained of by the patient.

In the sixteenth case, in which the pain did exist, the alterations discovered in the post mortem were as follow:—

In two of these cases (cases 1, 2) the patients presented after death tumours developed primarily in the dura mater, which had compressed the nervous substance in contact with them.

In two other cases (cases 3, 4) an effusion of blood existed in the great cavity of the arachnoid.

In two subjects (cases 18-21) no other alteration was observed but considerable effusion of limpid serum in the cerebral ventricles.

Three other subjects (cases 6, 7, 9) presented nothing but redness of the meninges.

Another (case 8) presented pseudo-membranous concretions deposited within the great arachnoid cavity.

In five post mortem examinations (cases 10, 15, 22, 24, 26) we found the pia mater, whether of the convexity, or of the base, infiltrated with pus. On one of these five (case 24) there were also found cellular adhesions intimately connecting together the two reflexions of the arachnoid covering the convexity of the brain. This individual had been all his life tormented with headach.

In only one case (case 16) we found the ventricles filled with purulent fluid.

From these facts we are warranted in concluding that the pain accompanying diseases of the meninges, may exist with diseases of these membranes widely differing from each other both in their nature and their seat.

Let us now inquire what lesions were found in the membranes in the twelve patients who complained not of headach. In two of them (cases 10 and 16), the pia mater was infiltrated with pus, either the portion of it extended over the convexity of the cerebral hemispheres (case 10), or that covering the base of the brain (case 16). A sero-purulent liquid filled the ventricles in the subject of case 19.

From these facts it follows, that the diseases of the membranes, during which no headach was observed, differed neither in their nature nor in their seat from those in which pain of head was one of the symptoms.

The following table will show the greater or less frequency of the headach in these different cases :—

Nature of the Changes.	Headach.	None.
Accidental productions developed in the dura matter,	2	0
Effusion of blood into the great cavity of the arachnoid,	2	0
Redness of the membranes,	3	0
False membranes in the cavity of the arachnoid,	4	0
Purulent infiltration of the pia mater,	5	2
Pus effused into the lateral ventricles,	1	1
Serous effusion into the pia mater externally, and into the ventricles,	2	6
Chronic thickening of the meninges,	0	1

Out of sixty-two cases of acute inflammation of the meninges, free from any complication, described in the work of MM. Parent du Chatelet and Martinet on Arachnitis, there were fifty in which pain of head is mentioned as a predominant symptom. Of these fifty, some were cases of meningitis of the convexity, and the others meningitis of the base or ventricles. Of fourteen cases of acute meningitis free from complication, published by Dance, there were twelve in whom this symptom was observed. In the numerous cases published by Dr. Charpentier, of Valenciennes, in his work on hydrocephalus acutus, pain of head was noted as a more or less predominant phenomenon of the disease. From this rèsumé of facts it follows that, in the great majority of cases, pain of head is a symptom of acute or chronic diseases of the meninges, and that it may accompany the most varied lesions of these membranes, either injection of their tissue, or the formation of membranous concretions on the free surface of the arachnoid, or purulent infiltration of the pia mater, or an effusion of pus into the ventricles, or a considerable accumulation of serum within these same ventricles.

Can this headach serve to distinguish an inflammation of the meninges, and is it not also found in other diseases, which, though existing without the brain, may still give rise to several of the symptoms which characterise acute meningitis ?— To the latter, acute inflammations of the digestive tube, in particular, may be be referred. Out of forty-five individuals affected with inflammation of the digestive tube, whether follicular or simply erythematous, whose autopsy is detailed in another part of this work, twenty-one complained of greater or less pain of head ; in the remaining twenty-four this symptom was not noted ; but among the latter there were seven, the precise history of whose state could not be satisfactorily ascertained. Out of thirty-one cases, whose history is described in the work of MM. Petit and Serres on Entero-mesenteric Fever, twenty-one complained of pain of head. Among thirty-six patients mentioned in Professor Bouillaud's work on fevers, headach was observed in twenty-eight. Among fifty cases reported by M. Louis, in his work on *Typhoid Fever*, forty-four were affected with headach. From these cases, and several others published by M. Trousseau and M. Dance (in all of which the only lesion found was in the digestive tube), it clearly follows that pain of head is a symptom observed in other instances than those wherein the nervous centres are primarily and idiopathically affected ; consequently it cannot be given as a proof of the existence of a meningeal affection. Presenting itself at the outset of several febrile affections, it indicates no doubt a disturbance of the innervation ; but it no more establishes the proof of a real meningitis, than those pains of the limbs do, which are so common in such cases. Is it not again to these pains, which are altogether nervous, and which are not connected with an inflammatory state of the organs in whose vicinity they are felt, that we should attribute several of the epigastralgies so frequent at the commencement of febrile diseases, and which we think are too often and too lightly attributed to a gastritis? However, pain of head, though joined to a crowd of different affections, may present in cases of meningitis, certain distinctive characters, indicating its connexion with an inflammation of the membranes of the brain. To this matter we shall now direct our attention, considering this pain of head with respect to its seat, its nature, its intensity, and duration, the time of its appearance, and its connexions with the other symptoms.

We have already seen that the headach is observed with equal frequency, whatever be the seat of the meningitis. We shall now inquire whether the seat of this pain of head varies with that of the affection, and whether it is possible to determine exactly the point where the meninges are affected, from the part where the pain of head is felt. On reviewing our sixteen cases where there was headach, we find that in five of them the seat of the pain of head was not pointed out, or that it was stated as affecting the entire head. In the eleven other cases, it was limited to a part of the cranium, and was often circumscribed very exactly to that part. Of these eleven cases of headach thus circumscribed, there are six in which the seat of the lesion of the meninges is very precisely indicated by the seat of the pain. In the five other cases where, as in those already considered, the pain of head was circumscribed, we find no connexion between the seat of the pain and that of the lesion. With respect to the five cases in which we no longer find the pain of head circumscribed, there is but one of them in which the lesion of the membranes was circumscribed to one point. In the four other cases, the affection of the membranes was much more general; it existed over the entire convexity of the hemispheres in cases 3 and 11; the serous membrane of the ventricles was specially affected in case 20; and, in fine, the entire of the membrane was affected in case 24.

From these facts we may conclude, that though in some cases the seat of the lesion of the membranes may be indicated by that of the pain of head, it is not always so. We have seen, in fact, some cases in which the meningitis is either much more extensive or much more limited than the seat of the headach seemed to announce. Oftentimes also the pain manifests itself at a distance from the place where the membranes are affected. Thus we have seen a simple frontal pain of head coincide sometimes with meningitis of the base, sometimes with meningitis of the ventricles. This assertion of ours is corroborated by very many cases contained in the work of MM. Parent and Martinet, as also in that of M. Dance on the acute hydrocephalus of adults, in which there is by no means a constant connexion between the seat of the pain and that of the lesion.

If we now seek what is the seat of the headach in severe fevers, we shall find that, in the great majority of cases, the pain is frontal or sub-orbital; that in some it is more particularly felt either at the temples, the sinciput or the occiput; and that in some cases the patients cannot point out its precise seat. There are then some traits of resemblance, with respect to seat, between the headach which is the symptom of a meningitis, and that which exists in continued fever. However, we do not see in the latter case, as in the former, the headach so precisely confined to certain points of the head. The intensity of the headach appears to merit considerable attention, when it may be an object to convert this symptom into a sign. The pain of head which accompanies severe fevers is most frequently not known by the physician, unless when he questions the patient on the subject, the latter giving but a mere secondary attention to it. In very many cases of meningitis, on the contrary, it is the patient who first mentions the pain of head; and until he has become either delirious or comatose, this pain is to him one of the predominant phenomena of his disorder; it sometimes forces him even to scream aloud. It has not been found that the different degrees of the intensity of the headach depended either on the nature of the lesions of the membranes, or on their seat. We have found it as acute in cases where there was but simple injection of the pia mater, as in those where the pia mater was infiltrated with pus, or where a false membrane covered the arachnoid. With respect to the seat of the lesions, we find that, in cases where the headach was most intense, some related to meningitis of the convexity of the hemispheres, others to meningitis of the base of those hemispheres, others to inflammation of the entire membranes surrounding the nervous centres, others, again, to effusions of pus or serum into the ventricles. Between these cases, and those where the pain of head was either much weaker, or none at all, we do not find any difference with respect to the lesions ; and in order to explain so many varieties, we are always obliged to admit individual dispositions, which, with lesions apparently identical, produce, according to the subjects affected, phenomena of the most different kind.

The nature, also, of the pain felt by patients attacked with meningitis is not the same in all. Some think that there is an enormous weight on their skull ; some complain of violent lancinating pain, either continued, or returning at intervals ; several fancy that a tight band compresses their forehead ; some say that their head is squeezed, as it were, in a vice. All motion applied to the head, or even to the other parts of the body, is oftentimes intolerable. We have seen some patients whose headach was increased by slight pressure made on the integuments of the cranium. We never saw, on the contrary, this pressure diminish the headach, as so often happens in the cases of headach called nervous. The period when the headach appears is not the same in all cases. Most frequently, however, it shows itself, from the commencement, sometimes dull at first, and gradually becoming intense ; sometimes, on the contrary, attaining at once its maximum of severity. In several cases of our own, in very many published by MM. Parent and Martinet, and in nearly all those of M. Dance, the pain of head showed itself from the very commencement. The cases in which headach marks the commencement of the disease seem divisible into two series, according as the headach developes itself singly, without any other morbid phenomenon accompanying it, or according as its appearance coincides with that of other symptoms. The first series includes the most numerous cases. The time during which the headach continues the only appreciable morbid phenomenon may vary from some hours to several days. When this headach thus precedes the other symptoms, there are some cases in which it seems to have nothing serious in it. It sometimes resembles mere rheumatic pain ; sometimes it might be taken for neuralgia. There are some individuals who, for some time, seemed to have merely a megrim more or less violent ; the mistake was easily fallen into in those cases where, a little after the appearance of the headach, vomiting supervened. The second series includes those cases in which the headach, still presenting itself at the commencement, is accompanied, from the moment of its appearance, by other symptoms, whether of mere febrile commotion, or of different disturbances of innervation. There are some rare cases in which the pain of head continues with great intensity during the entire disease ; but most frequently there are developed on the part of the nervous system more severe symptoms, which soon prevent it from being perceived or complained of by the patient. It may then be laid down that the pain of head generally exists only during the first period of meningitis. It is very uncommon to see it come on after this period. Headach is almost the only modification of sensibility observed in the ordinary cases of meningitis. In some few of the cases reported by us the cutaneous sensibility was rendered rather obtuse ; but it may be remarked, that in one of them the brain itself was the seat of considerable pressure made by a tumour developed in the dura mater. There was one case, also, where the sensibility was very much exalted. From several cases published by MM. Parent and Martinet, and also by M. Dance, we feel warranted in laying it down, that in the meningitis of adults, modifications observed in the cutaneous sensibility may be considered as mere exceptions ;

when they do exist, they are to be referred to a peculiar disposition in the subject, and not to any specific lesion.

It is but rarely that pains of any importance are observed in other parts of the body besides the cranium. If we compare, with respect to their nature and their frequency, the lesions of general sensibility observed in cases of acute meningitis, with those seen in cases of typhoid fever, we shall find that in both these lesions scarcely differ either as to their nature or their frequency; so that their existence cannot serve to establish the diagnosis between acute meningitis and severe cases of fever. We shall now terminate this consideration of the modifications of sensibility in meningitis, by inquiring in what manner the organs of the senses are disturbed in this disease, particularly those of sight and hearing. The modifications in the organ of sight were, for a long time, noted by pathologists as capable of serving to characterise certain acute or chronic affections of the brain. These modifications may be classed under the three following heads:—1st. Modifications of the motions of the globe of the eye; 2nd. Modifications in the state of the pupil; 3rd. Modifications of vision itself. The motions of the eye may be altered in several ways: sometimes they are irregular, and, as it were, convulsive; sometimes the globe is immoveable; sometimes there is strabismus of either one side or both. These different alterations in the movements of the eye cannot be referred to any specific lesion. They have been observed in adynamic and ataxic fevers, without any appreciable lesion of the nervous centres. Strabismus, however, when permanent, may be considered to possess more value as a sign of meningitis than the irregular movements of the globe of the eye, or its immobility. The state of the pupil is far from being always the same in the different cases of meningitis. Several physicians consider that this opening, contracted and immoveable in the first stage of the disease, becomes dilated and immoveable, as soon as serous or purulent effusion has taken place, either around the brain or into the ventricles. This rule I do not conceive to be always exact; for with lesions precisely identical the pupils may present the most different appearance: and what is more, with lesions altogether dissimilar, these openings may present precisely the same appearance. This was also long since remarked by MM. Parent and Martinet. We find, in their work, cases of dilatation of the two pupils: first, with effusion into the two lateral ventricles; secondly, with effusion into only one ventricle; thirdly, with mere serous or purulent infiltration around the brain (at the convexity or base); fourthly, without any of these lesions. In four cases where dilatation affected only one pupil, the effusion existed in the two ventricles. In another case, where there was also but one pupil dilated, the effusion took place in only one ventricle, that of the side opposite to the dilated pupil. With respect to contraction of the pupils, MM. Parent and Martinet cite cases where this contraction coincided with an effusion into the ventricles, and other cases in which no effusion existed. M. Guersent, the writer of the article *Meningitis* in the Dictionnaire de Medicine (21 vol. edit.), admits dilatation as an habitual phenomenon only in the last stage of the disease; before that period, he says that the pupils are sometimes dilated, and sometimes contracted.

The result of my own observation, as also of an attentive consideration of the cases published by others, is, that it would be vain to attempt to connect such or such a state of the pupil with any specific morbid alteration of the membranes.

Abstracting from the nature and seat of the lesion affecting the membranes, the pupils in those different affections may present the different states which follow:—

1. The pupils may preserve their natural appearance.

2. Dilatation of the pupils . . .
   - Equal dilatation.
   - Unequal dilatation.
   - Dilatation of only one.
   - Dilatation of one, and contraction of the other.

3. Contraction of the pupils . .
   - Equal.
   - Unequal.
   - Of both.
   - Of only one.
4. Alternations of contraction and dilatation of the pupils.

But these different modifications of the pupils are also met in a number of cases, where neither the meninges nor the brain present any appreciable lesion after death. We have observed them with all their shades in individuals labouring under fever. Every one knows also how, even in a state of health, the condition of the pupil varies. And if the iris is thus subject in its movements to a thousand different influences—if it be under the dominion of many other modifications of the nervous centres, besides those which pathological anatomy shall ever be able to reveal to us, why place any great confidence in the signs to be deduced from the different states of the pupil in order to diagnose a meningitis?

Vision itself is, as we have said, frequently disturbed in cases of meningeal affections. In some patients it is entirely lost; in others it is perverted: thus diplopia has been observed in some cases; hallucinations have been also noted; some persons cannot bear the rays of light on the retina. None of these alterations, however, can be said to belong peculiarly to meningitis. Very few cases have been recorded by medical men, in which the faculty of hearing was affected in meningitis. Our second case affords an example of deafness, in which, however, the entire lesion discovered after death was seated on the upper surface of one of the lobes of the cerebellum, and, consequently, at a considerable distance from the origin of the auditory nerves. There was then lesion of function, without any appreciable lesion of the organ destined to perform it. Here, however, some portion of the encephalic mass was found morbidly changed; whilst, in cases of typhoid fever, deafness has been observed, where the examination after death shows this mass and its envelopes to be in the healthiest state possible, at least to all appearance.

The more we study the different alterations of sensibility presented by individuals attacked by meningitis, the more satisfied we are that none of these alterations are constant, none of them necessarily connected with such or such a form of meningitis, and that disturbance of function is much less dependent on the membrane so affected, than on the brain itself. It is this organ that produces these disturbances, and consequently they must vary in the individual cases, according as the brain participates in, and sympathises with, the irritation of its membranes. In this way also, may be explained the infinite variability of the symptoms of pericarditis; for here too, the determining cause of the symptoms is not in the pericardium, but in the heart itself. What you see on the dead body cannot always inform you what took place during life, and pathological anatomy does not certainly tell us all that is to be known with respect either to the nature, seat, or treatment of disease*.

Lesions of motion.—Lesions of motion are more frequent in meningeal affections than those of sensation, but they are not more constant than the latter, and they are entirely wanting in cases where after death the same anatomical changes are found, as in the cases where these lesions have existed. Lesions of motion observed in affections of the meninges, may be divided into two great classes; in the one, the motions continue, but they are performed in a disorderly way; in the other, the motions no longer exist. The first class comprises the different spasms, which are sometimes clonic, sometimes tonic.

---

* When either the arachnoid or pia mater, which closely invest the brain, are extensively inflamed, the function of this organ becomes inevitably disturbed by sympathetic irritation, without its parenchyma necessarily partaking of the inflammation; or if the inflammation extend to the parenchyma, it is mostly confined to the superficial layer of the cortical substance. This is exactly the manner in which the functions of the lungs and intestines are disturbed in pleurisy, or peritonitis. Hence, in arachnitis or meningitis, besides headach and intense fever, we have an increase of the general sensibility, preternatural acuteness of the external senses, violent delirium, and convulsions, and finally collapse, coma, and death. Extensive inflammation of the hemispheres of the brain will be characterised by a nearly similar train of symptoms. In the great majority of cases, the two diseases give rise to each other, and are thus combined; it is then extremely difficult, if not impossible, to discriminate between them. Cyclop. of Med., vol. i. p. 284.

To clonic spasms we shall refer the disturbances of motion, which have been all noted in the different cases published on diseases of the meninges. Some persons present merely a state of general agitation; they are constantly in motion, and rest seems to them insupportable; they are incessantly anxious to change their position. In others, this agitation is confined to some particular part of the body; some patients are constantly moving their arms or legs; in some the trunk is alternately raised and depressed; some constantly move the head from right to left, and from left to right. In these cases it is the will, though irregular, that produces the motion; there are cases, however, where the motions are involuntary; thus, in some patients, the muscles which terminate at the flexor tendons of the fingers, are agitated by violent contractions; hence subsultus tendinum; several present, as a prominent symptom, a tremor which is sometimes general, and sometimes partial. Convulsions, properly so called, are among the most common phenomena accompanying acute meningitis. These are sometimes, though very rarely, general. When partial, they are sometimes confined to the same part, at other times they affect different parts of the body successively. The parts most usually affected with convulsive motions in meningitis are, the globes of the eyes, the eye-lids, the face, the lips, and finally the extremities. Tonic spasms, as they are called, are not less frequent than clonic, in the disease now under consideration. Thus permanent flexion of the fore-arm on the arm is often observed. Retroversion of the head, its inclination to the right or left, are sometimes observed in cases of meningitis, as also tetanic rigidity of the neck, trunk, or extremities, trismus, &c.

Under the second class, in which motion is diminished, or altogether destroyed, may be reckoned those numerous varieties of paralysis observed in meningitis. This paralysis may affect the muscles of the eye, of the eye-lids, face, lips, or limbs: either one, or several of these, may be deprived of motion. In these different parts the paralysis may be established either slowly, or as instantaneously as the loss of motion succeeding cerebral hemorrhage. The paralysis may supervene from the commencement, or succeed one of the forms of spasms already mentioned; it may alternate with these spasms; it may, in fine, co-exist with them, and we have witnessed more than once one of the upper extremities completely deprived of motion, whilst the other was more or less violently convulsed. There are also some cases in which the paralysis appears and disappears by turns; a phenomenon which will not surprise us, when we have seen, that in meningitis paralysis can exist only when there is compression of the brain. Simple hyperæmia of the pia mater, slight purulent infiltration of this membrane, are capable of producing it, or, to speak more accurately, are capable of producing in the brain that modification, inappreciable after death, which gives rise to it. After having considered in a manner purely nosological the different lesions of motion affecting those attacked with meningitis, we shall now try to establish some relations between these lesions, and the different changes found in the meninges after death. For this purpose we shall pass in review each of the disturbances of loco-motive action already alluded to, first mentioning the cases only, where such disturbance existed singly at the last period of life. 1st. With respect to *general agitation*, none of our cases presented this symptom single. MM. Parent and Martinet mention one case of it, in which the pia mater extended over the upper surface of the brain and cerebellum was infiltrated with pus. In another case mentioned by the same authors, in which this lesion was observed, the meninges extended over the convexity of the left hemisphere of the brain were found red and thickened. 2nd.

Partial agitation. We have not met one instance of this symptom uncombined with other lesions of motion. MM. Parent and Martinet mention a case in which there was observed a continual balancing of the head to the right and left: this occurred the day before the patient died. The membranes covering the upper surface of the cerebrum and cerebellum were opaque, very red, and thickened. The tissue of the cerebrum, cerebellum and spinal cord were remarkably dense. These same writers mention a case in which there was a continual moving of the lower jaw, similar to that of mastication. In this the pia mater of the convexity was infiltrated with pus. 3rd. *Subsultus tendinum.* Neither has any case occurred to us in which this symptom presented itself singly. MM. Parent and Martinet, however, record four cases, in which it was the only disturbance of the loco-motive functions. In one of these cases the meninges were red and thickened nearly throughout their entire extent. In the three others they were infiltrated with pus, either at the convexity, or towards the base; and in two of these three cases, the ventricles contained either a serous or a purulent liquid, with a granulated state of the membrane lining their parietes. 4th. *Trembling of the limbs.* We have not met any case of this occurring singly: but very few cases of it have been mentioned by others; and where it did occur, no particular morbid change was discovered after death on which it could appear to depend. 5th. *Convulsive movements.* These are observed principally in children. Five instances have been recorded in the work of MM. Parent and Martinet of their occurring in adults—in four of these there were convulsive movements of the eye-lids, face, lower jaw and extremities. In three of these four there was found purulent infiltration of the meninges of the convexity of the hemispheres; the fourth presented a membranous concretion, extended over the right hemisphere, and two ounces of serum in the right lateral ventricle. 6th. *Grinding of the teeth.* We have no account of this phenomenon having occurred singly in cases of meningitis. 7th. *Permanent flexion* (contracture) *of the limbs.* In the one case in which this was observed, we found considerable redness of the pia mater extended over the convexity of the left hemisphere of the brain, with injection of the grey substance of the circumvolutions of this side. In the case of a young girl mentioned by Parent and Martinet, who, during the five days previous to her death, presented permanent flexion of the two arms, there was found general inflammation of the arachnoid of the convexity. The meninges at the base were thickened, and a small quantity of pus infiltrated them towards the cerebellum. The ventricles were filled by a turbid serum. 8th. *Tetanic rigidity.* In a considerable number of cases where the prevailing phenomena are rigidity of the limbs, tetanic shocks of different parts of the body, tetanic curving of the trunk to the right or left, trismus, permanent retroversion of the head, the lesions found after death do not differ in their nature from those just mentioned. Thus we observe different parts of the pia mater more or less injected, purulent infiltration of this membrane, serous or purulent effusions into the ventricles.

In nineteen cases in which retroversion of the head was observed, this phenomenon coincided once with a lesion of the meninges of the convexity and base; twice with lesion of the meninges of the convexity, base, and that of the ventricles; three times with simple lesion of the meninges of the convexity, three times with lesion of the ventricular membrane, five times with lesion of the meninges of the base, and five times with lesion of the meninges of the base and ventricles.

In fifteen cases where tetanic rigidity was one of the prevailing phenomena, whether general, or limited to some part, as to the neck, trunk, extremities, jaw, the lesions, with respect to their seat, were as follow:—

Lesions of the meninges	of the convexity - -	three times.
	of the base - - -	three times.
	of the ventricles - - -	three times.
	of the base and ventricles - -	four times.
	of the entire meninges - -	twice.

9th. *Paralysis.* In the fifteen cases of hemiplegia already mentioned, the following alterations were seen: in four the brain was compressed by accidental productions developed in the meninges, which compression constantly occurred on the side opposite to that of the hemiplegia, and was made from above downwards. In five of these cases the compression was confined to one of the cerebral hemispheres; in one only (case 2) a tumour appertaining to the dura mater had compressed and wasted one of the lobes of the cerebellum. In this last case also the paralysis was crossed, just as in those cases where the lesion was seated in the cerebral hemispheres, and nothing else was observed but simple hemiplegia, without any other modification of motility. However, before the hemiplegia was established, convulsive movements had taken place in the arm of the side opposite to that of the lesion of the cerebellum; afterwards this limb ceased to have the power of motion; and subsequently the paralysis extended to the lower extremity of the same side. In the subject of our first case, the hemiplegia was established gradually without being preceded by any convulsive movement. There was in this case pressure made on one of the cerebral hemispheres by a fibrous vegetation of the dura mater. In our fourth case the extremities of the right side were both gradually paralysed; the fore-arm continued a considerable time flexed on the arm, but this flexion ceased at a subsequent period. Blood was found effused on the left side between the arachnoid and dura mater. In one of our cases, where a serous cyst, developed in the pia mater of the convexity, had preceptibly depressed the circumvolutions, the patient had a hemiplegia of very long standing, with atrophy of the paralysed limbs. In six other cases, observed partly by ourselves, and some by MM. Parent and Martinet, this hemiplegia was seen to coincide with the presence of a thick layer of pus which filled the pia mater of the convexity of the cerebral hemispheres.

Of these six cases there were three, in which, though there was hemiplegia, an equal quantity of pus was effused over the two hemispheres, and three others, in which the pus was collected only in the hemisphere of the side opposite to that where the paralysis took place. At first sight, the proportion here seems equal, but a more attentive examination will alter it entirely; for, in one case, at the same time that the pia mater of the convexity of the two hemispheres was infiltrated with pus, the substance of the brain (the left hemisphere), on the level of, and external to, the ancyroid cavity, contained a tubercle, which may be fairly considered to have caused the hemiplegia, more particularly as the latter affected the right side, and had come on progressively. In another of these cases, in addition to the purulent infiltration of the entire pia mater, on opening the body, the inner table of the frontal bone was found a little depressed, and making slight pressure on the brain. Besides, the effusion of pus, which had taken place over the two hemispheres, extended to the base of the cranium on the side opposite to that where the paralysis had taken place. There remains then but one case in which the paralysis having occurred on the left side, the entire pia mater was found infiltrated with pus, without any other complication, and even in this case, it was said, that towards the base the pus was more particularly accumulated on the right side. Thus, in these six cases of hemiplegia, with effusion of pus around the encephalic mass, there is not, in reality, one, in which the lesion was not greater on the side opposite to that of the paralysis.

Of these fifteen cases of hemiplegia already mentioned, there remain five in which the principal lesion existed within the ventricles, and of these five there were two, in which both the lateral ventricles were equally affected; in the three others, the only, or principal lesion, existed in the ventricle opposite to the side of the paralysis. In one of the above two, each lateral ventricle contained four ounces of limpid serum; the hemiplegia was on the right side, and seemed to have existed previous to the effusion. In one of the above five cases, the ventricles were distended by a considerable quantity of serum; there was also at the base of the brain a pseudo-membranous exudation, and the central white parts were softened. What was remarkable in this case is, that the paralysis which existed on the left side was but transient. The patient, at first, presented some rigidity of the fore-arm; slight retroversion of the head; convulsive movements of the eyes, and strabismus; then the right commissure of the lips was dragged; the extremities on the left side fell into a state of paralytic relaxation, whilst those of the right side retained motion and sensation; subsequently the mouth became straight, and the left extremities recovered their power of motion. In the fifth of these cases reported by MM. Parent and Martinet, and which they borrowed from Morgagni, the left ventricle was filled with pus, without there existing, either in the brain or its appendages, any other appreciable lesion. During life, the power of motion was destroyed over the right side of the body.

In a case reported by M. Dance, serum was found in the two ventricles; but in the right there were but three ounces, and in the left five; the membrane lining the parietes of these ventricles was also perceptibly thickened. A paralysis, which went on gradually increasing, affected the extremities of the right side, and the face on the same side. The extremities of the left side presented some tetanic twitches. The nature of the phenomena here seems to have been determined by the inequality of pressure made on each cerebral hemisphere, by the liquid contained in its ventricle. Instead of hemiplegia, some cases occur in which there is paralysis of only one limb. Thus, in one case where the pia mater, traversed by tubercular granulations, was infiltrated with serum towards the convexity of the brain, the right arm, as well as the right side of the face, were the only parts affected with paralysis. In case 25, where pus infiltrated the pia mater of the convexity, and filled the ventricles, we witnessed, on the one hand, paralysis of the right arm, and on the other hand, paralysis of the left eye-lid, which was depressed over the eye; as also of the left cheek, which became passively distended at each expiration. In these two cases the brain was exposed, on both sides, to equal pressure; yet, why do we find effects so different on the two sides of the body? MM. Parent and Martinet relate a case where there were observed, alternately, and within a short space of time, at first convulsive movements of the left arm, then paralysis of the right arm, then convulsions in this same right arm; and at the same time that these convulsions exist, the right side of the face was struck with paralysis. What do we find, however, on opening the body? Pus over the entire convexity of the brain, only being more abundant on the right. In the numerous cases, where some parts, as one side of the lips, or one of the eye-lids, are the only parts paralysed, we find lesions of the same nature and the same extent as in the preceding cases. The parts of the nervous centres which give origin to the nerves of the eye-lids and lips, present no appreciable lesion, and the pia mater is found either injected or filled with pus, as in the cases where complete hemiplegia existed.

We shall now consider those cases in which the loss of motion, instead of being confined to any particular part, is, on the contrary, general, and affects, either successively or simultaneously, the two sides of the body. In all the cases of this kind which have occurred to us, when the paralysis of both sides came on before the final struggle, we found, on both sides of the brain, lesions corresponding to this symptom.

The different facts which have now been analysed, with the view of discovering what are the lesions, which, in cases of meningitis, coincide with the different alterations in the power of motion, lead us to a singular conclusion, namely,—that with similar lesions of structure in the dead body, the most varied disturbances in the function of motion are found to coincide; in the greater number of cases, whether there has been convulsion or paralysis, the structural lesion after death will be the same. Thus, beyond that lesion which the scalpel points out as having its seat in the membranes of the brain, there is, in the brain itself, a modification, not recognisable by the anatomist, which is produced to be sure by the lesion of the membrane, but which, variable in each individual, is the real cause of all the functional disturbances which are seen to supervene.

The different disturbances in the function of motion now passed in review, may take place also in several other cases, where, the membranes being uninjured, the cerebral substance itself is altered. They may develop themselves in those diseases known under the name of fevers, the seat of which, we are so often led by the symptoms to place in the brain. In fevers, as in acute meningitis, we often observe subsultus tendinum, convulsive motions, oftentimes partial, very seldom general, trismus, tetanic affections of the trunk or extremities, permanent flexion of these same extremities, rigidity and paralysis of them, as well as that of the eye-lids and lips, trembling of certain muscles, grinding of the teeth. But in the great majority of cases, these phenomena are less frequent, less intense, and less durable. Their existence, however, proves that this same modification, produced in the brain by the irritation of the membranes, may also be produced in it under the influence of other causes, and that, without there being found, after death, any appreciable alteration, either in its substance or in the membranes which envelop it[*].

---

[*] Mr. Lallemand speaks somewhat decidedly regarding the feasibility of distinguishing arachnitis from inflammation of the substance of the brain by means of the symptoms connected with lesion of the functions of the muscular system; after premising that these symptoms present themselves under two opposite forms, with increase or diminution of action, with phenomena of irritation or of prostration, and having stated that both forms of action are common to arachnitis and encephalitis, he then says—"You see, by these cases, that the spasmodic contractions of the muscles may be produced by an arachnitis, and we shall see presently that attacks of epilepsy, contractions of the limbs, convulsive movements, subsultus tendinum, are the ordinary symptoms of affections of this membrane. You must not, however infer from this, that the arachnoid has a direct influence on the muscles. When this membrane is inflamed, the brain is irritated by the vicinity of the inflammation, its functions are exalted, and consequently those of the nervous system which are dependent on it, therefore also those of the muscular system; thence, convulsive movements, &c.: but as the tissue of the brain is not touched, these spasmodic symptoms are neither accompanied nor followed by paralysis. Thus, though they are sometimes observed at the commencement of inflammations of the brain, they are not sufficient to characterise this disease. But you will remark, that at this period the brain is as yet only irritated, as in cases of arachnitis, its tissue not being yet altered; it is not surprising, therefore, that the symptoms should be the same. However, it would be possible even now to distinguish them by this means: when they are produced by the affection of the arachnoid, they usually manifest themselves on the two sides of the body, whilst, when they depend on inflammation of the brain, they most frequently affect only one side. Besides, they cannot be confounded long: for in the latter case they are soon accompanied by symptoms of paralysis, and very frequently even there is observed from the commencement, the most singular mixture of paralysis and spasmodic phenomena." Lettre ii. p. 251; and at p. 277, he says:—"To sum up, the affections of the brain, and those of the arachnoid by their influence on the functions of the brain, manifest themselves externally by the lesion of the same functions, that is to say, by symptoms which are related to the perception of the impressions made by external agents, to intelligence, and to voluntary motion. The symptoms of inflammation of the brain present two characters entirely opposite; those of irritation, and those of collapse. On the one hand, exaltation of the intellectual faculties, headach, sensibility of the retina, contraction of the pupil, pains of the limbs, continued or intermittent contraction of the muscles: on the other hand, diminution of intelligence, stupor, somnolence, deafness, loss of sight and of speech, paralysis of the muscles, insensibility of the skin. The former set of symptoms are also observed in inflammation of the arachnoid, and the second in apoplexy. But it is only in inflammation of the brain that they are found combined, because in the former case there is irritation of the brain without alteration of its tissue; in the second there is, from the first, alteration without irritation: it is only in inflammation of the brain that there can be successively irritation and disorganisation. When the paralysis precedes the spasmodic symptoms, it is, that the alteration of tissue precedes the inflammation; that is to say, there is from the first effusion of blood. Finally, when the spasmodic symptoms are wanting, the slow and progressive course of the paralysis will easily render it distinguishable from that which is produced by apoplexy. Thus then in inflammation of the arachnoid we have *spasmodic symptoms without paralysis;* in apoplexy, *sudden paralysis, without spasmodic symptoms;* in inflammation of the brain, *spasmodic symptoms, slow and progressive paralysis, unequal and intermitting course.*"

ARTICLE III.

Lesions of Intelligence.

The intellectual faculties were found altered in the great majority of the cases which we have reported, as may be seen by referring to them. In fifty-four cases of acute meningitis affecting adults, reported by MM. Parent and Martinet, there were only two in which the intellects were not disturbed; whence, we may lay it down, that lesion of intellect is a much more constant phenomenon in acute meningitis, than that either of sensation or motion. Such lesion may present itself under two different forms in this disease, either under the form of delirium or that of coma. The delirium may present the greatest varieties with respect to its nature; in some it is very violent, accompanied with loud cries, and a great development of muscular strength. In others, on the contrary, it is of a silent description, and the patients appear very much prostrated in strength. Sometimes one single idea engages the mind of the patient; sometimes ideas of the most heterogeneous description occupy his thoughts. In some, this disturbance of intellect attains its highest degree from the very commencement; in others it comes on gradually and insensibly. On reviewing, in each case, the numerous varieties of form which the delirium presented, we might arrive at this important conclusion;—that no single one of these various forms characterises meningitis, that there is not one of them which may not be found in the different cerebral irritations which are purely sympathetic, and unaccompanied with any structural alteration of the membranes appreciable on the dead body.

When once the delirium has developed itself, it may not cease, presenting merely alternations of exacerbation and remission; it may also be only transitory. There are some patients in whom this disturbance of the intellectual faculties is but of very short duration; then, at the end of a period, more or less long, it returns; the intermissions become more and more short, and, at last, the disturbance becomes continued. In some, the delirium commences only at night, and the clearness of the intellect during the day seems, at first, to exclude the idea of a meningitis altogether. In some, a delirium of several days' duration suddenly disappears a little before death, when the other symptoms become more aggravated. Wherefore, when it is attempted to distinguish the delirium produced by meningitis from the delirium produced by sympathetic irritation of the brain, it is wrong to lay it down that the latter only can be intermittent, as numerous cases prove, beyond all doubt, that delirium arising from meningitis may be accompanied with perfectly lucid intervals. The period of the disease at which the delirium appears, is far from being the same in every case. Very rarely this phenomenon marks the outset of the malady; so that, in the midst of health, when delirium does suddenly come on, it is not at all probable that it is dependent on meningitis. In the great majority of cases, pain of head precedes it; and oftentimes six, eight, twelve, and even fifteen and twenty days pass on between the period at which the pain of head presents itself, and that at which the intelligence commences to be disturbed.

Out of forty cases of acute meningitis which fell either under our own view, or under that of others, in which we were certain on the one side of the precise time of the invasion of the disease, and on the other hand of the moment at which the intelligence began to be disturbed, we found the delirium to develop itself

1st day	3 times.	7th day	4 times.	13th day	4 times.
2nd	1	8th	6	14th	1
3rd	3	9th	2	15th	2
4th	3	10th	0	16th	1
5th	3	11th	0	20th	2
6th	3	12th	1	21th	1

Since, with very few exceptions, delirium presented itself as a constant phenomenon in acute meningitis, we must conclude that it may be produced in this disease, whatever be the nature of the lesion of which the membranes are the seat. All the lesions, in fact, observed in our several individual cases were accompanied with delirium. It is certainly curious to see a mere sanguineous congestion of the pia mater, even in cases where it is partial, a little pus infiltrating its meshes, produce the most serious disturbance in the intellects, whilst a much more deeply seated alteration of the brain, an extensive softening for instance, often exists without giving rise to the slightest disturbance of the intellectual faculties. Is it, as has been said, because the irritation of the membranes reacts principally on the most superficial parts of the cerebral circumvolutions, and that the intelligence is chiefly seated there*?

We shall next consider, whether for the production of delirium it is a matter of indifference what part of the meninges be affected. In this inquiry we can take into account those cases only in which the delirium continued to the end, single, and without being followed by coma. We have met but twenty-eight cases of this kind occurring either in our own experience, or recorded by others. In these twenty-eight cases, the lesion existed

On the upper surface of the two cerebral hemispheres	14 times.
On the upper surface of only one hemisphere	15
On the upper surface of the two hemispheres and at the base	3
On the upper surface of the two hemispheres, at the base, and in the ventricles	4
At the base alone	0
In the ventricles alone	2

Thus in these cases there are nineteen in which the lesion was limited to the convexity of the hemispheres, and only two in which the delirium persisted until death without there being a lesion of the meninges extended over the upper surface of the brain.

Instead of delirium, patients labouring under acute meningitis may present a state of coma, which sometimes exists from the commencement of the disease, and sometimes comes on only after delirium. This second case is much more frequent than the first, at least in adults.

When a patient dies in the midst of a state of coma, the lesions found in the meninges differ neither in their nature nor seat from those found in cases where life is terminated in the midst of a state of delirium. But then are these lesions different as to their seat? To solve this question, we shall take a review of the facts as they have been observed.

Out of sixty-one cases, in which death supervened in the midst of a comatose state, which existed either for several days with or without preceding delirium, or at least for twenty-four hours, we found the lesion to exist

---

* On the subject of delirium, as connected with arachnitis, Lallemand makes the following remarks :—" Delirium is in general regarded as a symptom of inflammation of the brain ; its absence might induce one to doubt of the inflammatory nature of softening of the brain. But it is, on the contrary, a stronger reason for this opinion ; it will be no difficult matter satisfactorily to prove that delirium is *never* observed in inflammations of the brain which are exempt from complication, that this symptom belongs *specially* to inflammations of the arachnoid, that persons have been led into error by the very numerous cases in which the affection of the arachnoid preceded that of the brain. I admit that it seemed natural to attribute the delirium to inflammation of the brain, rather than to that of the arachnoid ; but still an error was committed. Do not, however, suppose that I would make the arachnoid the seat of the delirium ; every symptom is the alteration of a function, and cannot be produced but by the organ which executed this function ; but I have already said that the affections of the arachnoid influence the functions of the brain in the same manner as the affections of the pleura influence the functions of the lung. It is impossible that the arachnoid should be inflamed without the surface of the brain in contact with it being also affected ; but its tissue not being altered, there merely results from this vicinity an exaltation in its functions." —*Lettre* 2, p. 246.

On the upper surface of the two cerebral hemispheres	11 times.
On the upper surface of but one hemisphere	6
On the upper surface of the two hemispheres and at the base	5
On the upper surface of the two hemispheres and in the ventricles	13
On the upper surface of the two hemispheres, at their base, and in the ventricles	8
In the lateral ventricles	9
At the base of the brain	4

Hence it follows that coma may come on at the different periods of acute meningitis, whatever be the part of the meninges affected. We cannot, therefore, lay it down with some authors that delirium appertains exclusively to meningitis of the convexity, and that coma is peculiar to meningitis of the base. We think that, whatever be its seat, meningeal inflammation may have the effect of determining in the brain at first a period of excitement announced by delirium, then a period of collapse, either real or apparent, which is manifested by coma. In the great majority of cases which terminate in death, these two periods exist. However, in some instances, the period of excitement continues beyond the usual time, and such persons die before the coma has arrived. In others, on the contrary, the signs of excitement are very transient, scarcely ever apparent, and the state of coma declares itself, without having been preceded by delirium, properly so called. There are, in fine, some cases in which the coma is the first symptom ; individuals who a little before were in a good state of health, fall down suddenly deprived of consciousness, sensation and motion. Our 20th and 21st cases present examples of this apoplectic form of the disease. In the two individuals who form the subject of them, nothing else was found, but an enormous distension of the ventricles by limpid serum. Does this form, which differs from all the others, belong exclusively to acute dropsy of the ventricles ? It is possible that the mere effusion of serum around the brain, which infiltrates the pia mater, and suddenly compresses the nervous mass, may also produce this apoplectic form ; but in all the cases of this kind hitherto observed, the ventricles were the principal seat of the effusion. To the cases already cited, we might add another recently published by Dr. Martin Solon ; it was that of an old man, seventy-six years of age, labouring under organic disease of the heart. The dropsy symptomatic of this affection had gradually disappeared, and the patient appeared to be doing very well. He got up one morning out of bed to go to the water closet—returned quickly to his room with his face much flushed, endeavoured to make towards his bed, when he fell down suddenly, and expired without uttering a word. On opening the body, the sinuses were found gorged with blood, the surface of the brain pale, the arachnoid transparent, not thickened, raised by a serous, limpid, colourless liquid, which infiltrated the pia mater, and might be estimated at about five or six ounces. The lateral ventricles were also found filled with a serum equally limpid and transparent ; neither their parietes, nor the central white parts presented any softening. In the chest was discovered an organic affection of the heart, namely dilatation of its cavities, a thinness of its walls, and a cartilaginous state of the tricuspid valve.

Thus, then, in proportion to the greater or less rapidity with which a serous effusion takes place, whether simultaneously into the ventricles or around the brain, or solely within the ventricles, very different forms of disease may present themselves. If in a very short space of time, a very large quantity of serum has been exhaled by the arachnoid, the result may be a morbid state similar to that which is produced by a very large cerebral hemorrhage, in other words, apoplexy. This is serous apoplexy, an affection which we consider the moderns have been very wrong in erasing from their nosological systems.—(See Case 20.) If the serum accumulate somewhat less rapidly, either in the external pia mater, or in the ventricles, the symptoms are then observed to be such as accompany every irritation of the meninges.—(See case 19.) If the accumulation of serum takes place slowly, there may result a third form, of which we have an example in case 21. Here the power of motion remains unimpaired, whilst the intelligence becomes weakened only by degrees.

To conclude: in those cases where the disturbance of the intelligence depends on an affection of the meninges, the cause of this disturbance can no more be referred to any specific alteration, than that of motion or sensation can, and the diversity of the lesions of intelligence, as well as of those of sensation and motion, can only be accounted for by referring it to the different susceptibility of the brain to impressions.

CHAPTER III.

DISTURBANCES OF THE FUNCTIONS OF THE ORGANS OF NUTRITIVE LIFE.

Several of these disturbances are very important to be considered, when we wish to establish the diagnosis of meningitis, and to distinguish it from other diseases in which nearly the same functional disturbances of the brain are observed. On the part of the digestive organs, for instance, there appear in a great number of individuals attacked with acute meningitis very remarkable morbid phenomena, which supervene, but much more rarely in cases where the intestine is the seat of inflammation more or less intense. The circulation is also disturbed in certain cases in so particular a way that, by combining the signs furnished by it with the signs afforded by the disturbance of the cerebral functions, we may be able to attain with certainty the diagnosis of meningitis.

ARTICLE I.

Lesions of the functions of the digestive apparatus.

In a considerable number of individuals attacked with meningitis, the digestive tube does not present during life any appreciable functional lesion. In others it is the seat of disturbances more or less severe; in this latter case, it is an object to inquire whether these disturbances are merely the result of an anormal influence exercised by the nervous centres on the digestive passages, or whether they are connected with an affection of these same passages, which affection has complicated the disease of the encephalic membranes.

When the meningitis was not complicated with any other affection, we found the tongue always to preserve its natural state: it is broad, moist, free from any redness, and sometimes even paler than usual: most frequently it is covered with a light white coating. This was the result of the analysis of thirty-seven cases, in which the state of the tongue was carefully noted. Among these thirty-seven, there were twenty-four in whom the tongue preserved the state above-mentioned during the entire course of the disease. Now, of these twenty-four cases, sixteen of which came under our own observation, and the rest under that of M. Dance, we find there were fourteen in whom the stomach presented nothing unnatural after death, the remainder of the digestive canal also being perfectly sound, with the exception of case 7th, where the lesion found was on the decline, and was connected with a disease, the symptoms of which ceased to exist several days before death.—(See the remarks subjoined to this case.)—There remain ten then in which, the tongue having preserved its natural appearance till death, the stomach, however, did not appear to be in its physiological state. But the lesions presented by it were such as, under ordinary circumstances, do not exercise any influence on the state of the tongue.

We shall now consider the thirteen cases in which the tongue lost its natural appearance. It was then red, dry, cleft, brown, encrusted or covered with a mucous coat, much thicker than the thin white coat already mentioned, which cannot in our opinion be considered a morbid state of the tongue. Now, of these thirteen cases there was not one which presented the gastric or intestinal mucous membrane entirely exempt from lesion. Sometimes this lesion was of a serious character, and of that class of lesion which usually coincides with a modification in the state of the tongue; sometimes, on the contrary, the lesions found in the stomach were of a description similar to that of the lesions which we have already seen to coincide with a natural state of the tongue. It may be here remarked that acute inflammations of the bladder oftentimes modify very perceptibly the state of the tongue.—(See case 17.)

In recapitulation it may be asserted that every time when, in an individual who has died of an affection of the meninges, we found on examination no morbid state either of the digestive or urinary passages, the tongue never lost for one instant its natural state; it also preserved it in several cases where the lesions found in the stomach were of the nature of those which most frequently do not modify the state of the tongue; and, in fine, the tongue has scarcely ever lost its physiological state, except in cases where the necropsy pointed out disturbances which are known to coincide ordinarily with a modification, more or less perceptible, of the state of the tongue. Every time then that, in a patient who exhibits several of the signs of encephalic irritation, the tongue shall be found red, dry, brown, &c., we shall be disposed to consider either that this irritation is but the sympathic product of another disease, or else that the latter complicates it*. Thus, among the numerous causes which may modify the state of the tongue, we must not consider inflammation of the meninges. But during its progress, or simultaneously with it, different morbid states may be developed, which may or may not be appreciated by morbid anatomy, which may bring on with them a modification in the natural state of the tongue.

In most of the cases where meningitis was not complicated with any affection, the thirst did not seem to us to be very great. The loss of appetite oftentimes manifested itself at the onset of the disease; yet in some cases the appetite still remained, even when the intense headach so frequently marking the commencement of the disease, already existed for several days.

In some cases the epigastrium was the seat of pain sufficiently acute to be increased by pressure, and we have not seen in any of the cases where this pain existed that there was a complication of gastritis. This pain in the epigastrium manifested itself in most cases at a period not far removed from the commencement of the malady. We never observed it to become very intense, nor is it to be compared in this respect to the pain of head.

We are now come to one of the phenomena which best characterise certain cases of meningitis, we mean vomiting and nausea. Here, as in several other circumstances, the stomach is the seat of the phenomenon ; but its cause is elsewhere. Vomiting, or at least nausea, very frequently accompanies acute inflammation of the meninges : these phenomena show themselves almost always in the first stage of the disease, and often mark its commencement. Sometimes they, not being oftentimes repeated, attract but little attention ; and after about twenty-four or thirty hours, they do not return. Sometimes, on the contrary, they continue for several days, and occasionally during the entire course of the disease.

---

* As there is no rule without an exception, we may state here, that in some cases reported in the fourth volume of this work, where the prevailing symptoms were those of *ataxic* fever, the natural appearance of the tongue might incline one to believe in the existence of meningitis; and still such was not the case, and the entire disturbance, that at least which anatomy could appreciate, was seated in the intestine.

Simultaneously with this vomiting, it often happens that no other symptom is observed connected with the digestive passages ; the tongue remains natural ; the epigastrium is free from pain ; the entire abdomen is perfectly soft ; and, in cases where death has supervened, whilst this vomiting still existed, the stomach was frequently found in the soundest state. A striking example of a modification of function, which is explained to us by no change in the texture of the organ.

If we now inquire whether the frequency of the nausea and vomiting is dependent on the seat of the meningitis, we shall find that these symptoms are observed in nearly an equal proportion, whether it be meningitis of the convexity, or that of the base, or that of the ventricles. Thus the seat of the disease has no influence on the production of the nausea and vomiting. The same may be said of the nature of the lesion. Why, then, in two cases where the apparent lesions are the same, does vomiting take place in one, and not in the other? Anatomy cannot inform us. Thus, every time that we wish to ascend to the cause of the inconstancy of the symptoms of meningitis, we cannot account for this inconstancy by the difference of the lesions of the meninges ; and we are obliged to admit that, in the brain itself, there are some functional modifications, the secret of which has not yet been found out by the skill of the anatomist. Vomiting, when it presents the characters now mentioned, when, for example, a natural state of the tongue coincides with it, is a valuable sign to distinguish, at the commencement, the nervous symptoms which depend on idiopathic irritation of the encephalon from those which are connected with inflammation of the intestinal follicles. We shall see, in the fourth part of this work, how rare vomiting is in the latter case. Such are the principal functional disturbances which are observed in reference to the stomach in cases of meningitis. With respect to the intestines, properly so called, they present but very few disturbances. Thus, in all the cases of meningitis exempt from complication, which have fallen under our own observation, or have been mentioned by others, we have found the abdomen soft and free from pain in all its parts ; the stools are few; meteorism takes place only when the intestine itself is affected ; and this uniform absence of meteorism is again one of the characters by the help of which we shall be able to distinguish a meningitis from a severe attack of fever ; after which we find, in the post mortem examination, no other lesion except in the digestive tube.

ARTICLE II.

Lesions of the Circulation.

The disturbances produced by affections of the meninges in the circulatory apparatus may be manifested, first, in the motions of the heart ; secondly, in the manner in which the arterial expansions are performed ; thirdly, in the capillary circulation ; fourthly, in the qualities of the blood itself.

The heart, examined during life, presented to us no other modifications except those announced by the pulse. After death it presented nothing particular, with the exception of one individual, who died with symptoms of apoplexy, and in whom the ventricles were found dilated by a great quantity of serum. This person had an organic affection of the heart.

The arterial expansions presented modifications to us with respect to their frequency, their strength, and their rhythm. From a very considerable number of cases of meningitis, in which the state of the pulse, with respect to frequency, was carefully noted, we feel warranted in asserting, that nothing is more variable than the state of the pulse in cases of meningitis.

If, in a considerable number of patients, it be perceptibly accelerated, in others the arterial pulsations are not more frequent than in the natural state; whilst in others, again, they become slower than ordinary. We may note, also, that the proportion of the cases in which the pulse remains free from frequency, or becomes slower, is more considerable in acute affections of the meninges than in the equally acute affections of the thoracic and abdominal viscera. Slowness of the pulse becomes again a sign of considerable importance in aiding us to distinguish a real affection of the meninges from other morbid states which may resemble it. We may here refer to some cases in which the meninges, coming to be affected during the course of another affection, the commencement of this complication was marked by an extraordinary change in the pulse, which having till then been very much accelerated, suddenly lost its frequency. From the analysis of several cases, we have arrived at the conclusion, that the absence of frequency in the pulse, no more than its slowness, depends neither on the seat nor nature of the meningeal inflammation ; yet our experience induces us to think that this state of the circulation is more frequent when the ventricles are distended by a considerable quantity of liquid ; but we have also seen it in cases where the ventricles were perfectly sound. From the consideration of several cases, we may venture to state, that the cases of meningitis, in which the pulse was accelerated, seem to be more particularly cases of inflammation of the meninges of the convexity ; and it was almost exclusively when we found on the dead body lesions characterising the inflammatory state that this acceleration was observed. The pulse, considered with respect to its strength, presents no constant character; it some cases it is hard, full, and vibrating ; whilst in others it is small and concentrated from the commencement of the affection. It generally becomes weaker and more compressible during the period of coma. Irregularity in the rythm of the pulse has been observed in some meningeal inflammations ; but pathalogical anatomy is as unable to account for such a phenomenon as for its strength or weakness, frequency or slowness. The capillary circulation undergoes certain modifications in persons labouring under meningitis. These are recognisable principally in the conjunctiva and face ; the commencement of the disease is frequently accompanied by great redness of both these parts. This state is sometimes succeeded by great paleness ; sometimes this paleness exists from the commencement of the attack, and it continues to the very last moment of life ; and this is observed not only in those cases where a copious effusion of serum is found after death, but also in cases where dissection detected proofs of very active inflammation in the membranes of the brain, such as infiltration of the pia mater with pus, flocculent serum in the ventricles, false membranes at the base of the brain. The temperature of the skin varies considerably in the different forms of meningeal affections ; oftentimes it is increased ; frequently, also, it remains perfectly natural in all the phases of the disease. It is not uniformly raised even in those very cases where, after death, pus is found around the brain.

ARTICLE III.

Lesions of the Respiration[*].

This function does not always remain in its natural state in persons labouring under meningeal affections. The disturbances which it undergoes appear to depend on the influence which the affection of the nervous centres exercises over it; since, after death, we do not detect in the lungs any lesion which can account for the modifications observed in the respiration during life. We know from experience, however, that the cases in which the respiration remained in the natural state are much more numerous than those in which it was in any way modified. There are, however, very few cases in which the respiration did not become embarrassed and stertorous during the few hours immediately preceding death. In some, to be sure, we see life suddenly terminate without any difficulty whatever in the respiration. Those cases in which the respiration continued natural, presented all the possible varieties of lesion of the meninges, whether with respect to their nature, or to their seat. With reference to the cases in which the respiration was modified, nothing particular was observable in the morbid changes in the meninges; so that here again the anatomical data are completely insufficient to explain the variable influence which the irritated or compressed brain exercises over the action of the respiratory apparatus. Some cases to be presented in a subsequent volume of this work, prove that, without any appreciable lesion of the brain or its membranes, the respiration may exhibit all possible modifications; for this it is only necessary that any cause whatever should disturb the innervation either temporarily or permanently.

SUPPLEMENT.

Spinal Meningitis, or Inflammation of the Membranes of the Spinal Marrow[†].

Inflammation of the membranes of the cord is seldom found limited to the extent of the spinal canal; most frequently the membranes of the brain are found at the same time inflamed. This inflammation is characterised on the dead body by a yellowish, opaque, membraniform exudation, varying in thickness and consistence, sometimes continued the whole length of the cord, sometimes forming detached and separate patches. This exudation is usually situated between the arachnoid and pia mater of the cord: so that, on cutting into the dura mater, the spinal cord appears at first sight increased in volume, and changed into a yellowish substance: such is uniformly the seat of this puriform layer, which is always thicker in the posterior than in the anterior part of the cord. When this concrete substance is removed, we perceive that there exists at the same time thickening and injection of the sub-arachnoid cellular tissue, which is evidently inflamed, whilst the arachnoid itself presents neither injection nor opacity. There is also usually in the lumbar portion of the spinal canal a sero-purulent liquid, more or less turbid, and in rather considerable quantity.

---

[*] With respect to the modifications which the several functions, &c., undergo in meningeal inflammation, and in order to assign the real cause on which such modifications depend, the following passage is here annexed from the Cyclopædia of Practical Medicine, vol. i. article "Brain:"—"The brain confessedly presides over all the phenomena which are attended with consciousness, and over every act which is influenced by the will: it is the organ of intellect, and the centre of sensation and of voluntary motion. Moreover, through the pneumo-gastric nerve it influences directly the functions of digestion and respiration, and indirectly (through the respiratory apparatus) that of the circulation. Experiment also demonstrates its intimate connexion with the regulation of animal temperature. Now if we note the symptoms attributed to inflammation of the arachnoid membrane, or look over the catalogue of them as enumerated by different writers, we shall find that they are but so many lesions or disturbances of one or more of the cerebral functions; and as such they must arise from an affection of the organ itself, which holds these functions in dependence, and not of the investing membranes, which cannot exert on these functions any direct controul. Thus when, in the summary of the symptoms of arachnitis, we find delirium, spasm, and rigidity of the muscles, convulsions, vomiting, stupor, coma, contraction or dilatation of the pupils, with strabismus, we must refer them to an alteration in the function or structure of some part of the cerebro-spinal mass, and not of its investments merely. The arachnoid and pia mater are so simple in their structure and function, that we can scarcely assign to inflammatory action, when set up in them, any other indication except pain or headach."

[†] The above Supplement has been compiled from the last edition of Ollivier's Work on Diseases of the Spinal Cord; such addition was considered necessary to render the pathology of the cerebro-spinal system complete in this first part.

All these details are the more particularly insisted on, inasmuch as it is generally said that the arachnoid is then inflamed and its cavity filled with purulent matter. This assertion is false, and arises from want of due attention in making the examination. The purulent exudation is always subjacent to the arachnoid, which ordinarily retains its smooth and polished appearance; and when the cavity of this serous membrane is covered with similar concretions, a thing which rarely happens, there is always at the same time a purulent exudation between the pia mater of the cord, and the corresponding arachnoid reflexion, that is, in the space filled in the normal state by the spinal liquid. The ventricular parietes of the encephalon are also frequently found covered by a similar pseudo-membranous layer.

Acute spinal meningitis does not always leave the same traces in individuals who die in consequence of it. Sometimes it gives rise to acute dropsy*; the membranes have a red, violet tint, evidently caused by the injection of the sub-arachnoid vessels, and the serous reflexion is rendered opaque by the thickening of the cellular tissue to which it is immediately contiguous.

At other times isolated points are seen more or less injected and red, which are evident traces of local inflammation; they are seen particularly when there is caries of one or more vertebræ, opposite the altered part of the spine. These circumscribed inflammations are seldom observed when there is no alteration of the bones. Sometimes the cavity of the membranes is filled with fluid blood, the product of an accidental exhalation. We have not always met, in persons who have died after spinal meningitis, the traces of this inflammation within the membranous envelopes of the cord. Bergamaschi† cites an instance where there was only found a serous effusion between the bony tube of the spine and the dura mater; he mentions another instance, as does also Lallemand ‡, where a considerable effusion of blood was seen in this part.

The vessels of the coverings of the cord are, in general, more or less injected, but particularly those of the spine and of the pia mater. Sometimes the substance of this organ is softer than in the natural state; sometimes it presents no appreciable change; sometimes it is unusually hard (Bergamaschi); at other times it is evidently softened. In a word, inflammation of the membranes may exist with or without inflammation of the substance of the spinal marrow.

Hitherto anatomical research has not been able to discover any vessels in the arachnoid, and yet all authors speak of its inflammation; but it is evident that the vessels which are subjacent to this membrane have been considered as belonging to it. The red tint and thickening which it then presents, are owing, as I have already said, to the injection of these same vessels, and to the infiltration or thickening of the sub-serous cellular tissue.

The arachnoid, says Beclard §, has the same structure as the other serous membranes, but it has a very soft consistence; it is extremely thin, and its texture cannot be determined; it appears homogeneous, we observe no vessels in it, even when in a state of disease. Most of the morbid phenomena attributed to it take place in the tissue lying on the pia mater: it seems, in fact, to form a separate genus altogether. Such is the cause of the opaque and whitish appearance which the cerebral arachnoid often presents in a part of its extent. If this membrane be examined with attention in these different points, it will soon be ascertained that its greater density, owing probably to a chronic inflammation, is produced by the thickening of the cellular tissue uniting it to the pia mater, to which it is then sometimes found closely adhering. The inflammation which determines these changes in the cerebral arachnoid has been most frequently of a chronic nature; a thing which is seldom observed in spinal meningitis, the progress of which is usually rapid, whence it is that such opacities are not often observed in the vertebral arachnoid.

The most ordinary effects of chronic spinal meningitis are adhesions between the serous reflexion lining the dura mater, and that corresponding to the pia mater of the spinal marrow. This has been frequently observed, particularly in inflammation of these membranes consequent to a lesion of the vertebræ. Another alteration of the spinal arachnoid, and one which is peculiar to it, consists in the presence of cartilaginous plates, marked with roughnesses on the side of the arachnoid cavity; the primary cause of their formation is not at present easily determined; they are found, however, pretty often in persons who have presented during life phenomena resulting from a chronic irritation of the cerebro-spinal centre.

---

* J. Frank, Prax. Med., etc., de Rachialgite, p. 80.

† Giornale delia Soc. Med. Chir. di Parma, giugno, 1810.

‡ Deuxieme Lettre sur L'Encephale, Obs. No. 30, p. 305.

§ Anat. Gén.

Partial injections of the spinal arachnoid have been several times observed, which appeared to be seated in the arachnoid itself; but more attentive examination showed that the injected vessels lay beneath the serous membrane. These partial injections sometimes form small red pointed patches, which seem to be in the substance of the serous reflexion, which then presents a real thickening, and which is then often united to the fold lining the dura mater by more or less cellular filaments. M. Ribes (Dict. des Sc. Méd., art. *Vertebre*) also thinks that the seat of the inflammation is not in the spinal arachnoid, but in the dura mater, which receives a great number of vessels, in the pia mater, which also contains several, and in the vessels which, from this membrane, penetrate into the substance of the spinal marrow. Those cases wherein a great quantity of blood or serum has been found between the bony tube of the spine and the dura mater, support this opinion. Be that as it may, the least equivocal traces of spinal meningitis consist in a puriform exudation situate between the pia mater and the arachnoid.

SYMPTOMS OF SPINAL MENINGITIS.

Spinal Meningitis is often obscure at the commencement, and like many other diseases, announces itself only by a feeling of uneasiness and fatigue in the limbs; there exists, however, at the same time constipation, dysuria, or even a retention of urine. The patients then complain of a slight pain in the back, often in the lumbar region only, which pain is at first dull, and which extends to the lower extremities. The existence of phenomena dependent on a cerebral affection often increases the difficulty of the diagnosis at the commencement of the complaint: we have, in fact, seen that inflammation of the membranous envelopes of the spinal marrow is seldom limited to the spinal canal; most frequently those of the brain are also inflamed in a variable extent; symptoms of cerebral meningitis present themselves in many cases together with those of spinal meningitis. But on separating the former from the latter, and on bringing together the examples of this inflammation, we find that there are two symptoms which might be considered as pathognomonic signs of acute inflammation of the membranes of the cord, since they are, if not always, at least most frequently combined.

The first consists in a general contraction of the muscles of the posterior part of the trunk, which may vary from simple muscular rigidity to the most violent contraction, which then produces retroversion of the head and trunk, whence arises a real opisthotonos, and the spine forms a species of inflexible arch down its entire length. We have seen this curve to exist in cases where the autopsy proved that the inflammation was limited to the spinal meninges alone, those of the brain being altogether exempt from inflammation; so that we may consider this symptom as positively indicating the inflammation of the membranes of the cord. However, it must not be forgotten that in meningitis at the base of the brain, the cervical part of the spine is sometimes curved backwards; but the rest of the trunk retains its natural straightness and flexibility.

We see that this tetanic contraction manifests itself principally when we wish to make the patients move, and it even happens that it does not exist when the body is in a state of complete rest. The muscular rigidity is seated principally in the trunk, without the extremities participating in it; these, however, are often equally affected. The movements, which are in some measure restrained by the pain, have less force, but they are not paralysed, unless there be some alteration of the brain which produces this effect.

The second symptom is a pain, more or less acute, in the dorsal region; it seems to commence in general from the point where the inflammation is most intense, and there also it is always most acute. It, as well as the muscular rigidity, presents remissions, and sometimes even it disappears in order to manifest itself anew. It is marked also by irregular intermissions. The pain may exist without any perceptible muscular contraction; but it is ordinarily accompanied by this phenomenon, or by convulsive motions, and uniformly the rigidity of the muscles manifests itself immediately, or a little time after the pain has appeared. According to some authors, this pain is increased by pressure. I have not, however, observed it. . . . . . The violent pain complained of by patients along the spine is a constant symptom of spinal meningitis: sometimes it darts rapidly from the point primarily painful to the entire extent of the back; its radiations are extended to the limbs, and the slightest pressure, or a mere displacement, makes the patient scream aloud. This morbid exaltation of the general sensibility is an almost constant phenomenon in spinal meningitis, and there is commonly observed no diminution of this property, a circumstance which assists in distinguishing this inflammation from myelitis, which is ordinarily accompanied with a more or less complete abolition of the sensibility. Thus this sign may serve to characterise inflammation limited to the membranes of the spinal cord, since in the one the sensibility is exalted, and in the other it is weakened or destroyed.

The combination of the two symptoms just described characterise in a manner acute inflammation of the spinal meninges, for in all the cases in which both were observed, the autopsy showed an inflammation of the entire extent, or of the greater part of these membranes, and sometimes, but rarely, the inflammation occupied but a very limited space. To these phenomena we must add more or less acute pains in the limbs, greater or less rigidity of these same parts, trismus, and sometimes convulsions. Respiration is difficult and panting: this latter symptom is rather frequent, and is readily accounted for from the nature and seat of the disease. The pulse, which at first undergoes but little change, always preserves its regularity, then becomes more and more frequent, and loses somewhat of its strength; it is small, concentrated, whilst the movements of the heart are strong and rapid. Ordinarily copious sweat covers the patient during the attack, when the tetanic contractions are intermittent. With respect to the paralysis and the convulsions, they may likewise depend on inflammation of the cerebral membranes, which so often exists at the same time, or on that of the brain, and then the face may be red, the eyes bright and animated, thirst intense, deglutition difficult, delirium more or less violent, &c. Tetanus has been considered as the result of inflammation of the spinal membranes, because it has been observed several times in persons who have died of this disease; but as it has happened just as often that no trace of inflammation was detected in this case, nothing can be inferred on that subject. Some physicians think that this inflammation exists principally in traumatic tetanus. However, if this inflammation is not the alteration which constitutes tetanus, it is nevertheless true that it is occasionally observed, and such coincidence should always be remarked.

With the exception of the retention of urine, and of the constipation which always exist in spinal meningitis, no very particular disturbance is observed in the functions of the other organs of the abdomen, nor in those of the thorax, and yet we have seen that there are most frequently traces of inflammation more or less intense in the respiratory and digestive apparatus. I shall observe, that the abolition of the functions of the bladder always continues in the same degree from the commencement to the end, whilst the same thing does not happen with respect to the intestine, the fæces being passed naturally at the close of the disease. The movements of the heart appeared to be perceptibly influenced but on one occasion; but the pulse has always increased in frequency, and diminished in strength. As for the respiration, it is uniformly difficult and incomplete.

With respect to the causes under the influence of which spinal arachnitis may develop itself spontaneously, it is often very difficult to determine them. Persons subject to rheumatic affections appear to be more exposed to this inflammation. It may also be brought on, according to Vogel, by the suppression of the menstrual or hemorrhoidal flux. It is often consecutive on cerebral meningitis. Violent contusions, pricking or laceration of the spinal envelopes, changes produced in the vertebræ, may also bring on this inflammation, as likewise violent exertions of any kind. With regard to the treatment, recourse must be at once had to copious general bleeding, particularly in the young and vigorous; to this, which is to be repeated as occasion may demand, must be joined local bleeding, by means of leeches, or cupping, along the entire of the vertebral column. The cold affusion, and the application of ice, which are so advantageous in cerebral meningitis, must be equally so in an inflammation seated in a similar part. When the inflammation is chronic, rubefacients and blisters have been found serviceable. The same may be said of the cautery, and of moxas. With this should be combined emollient and gently laxative drinks;—laxative lavements may also act advantageously, as derivatives. Distension of the urinary bladder should be prevented, by sounding the patient frequently in the course of the day.

Ollivier, Traité de la Moelle Epinière, vol. ii. chap. 7, &c.

SECOND BOOK.

DISEASES OF THE BRAIN.

FIRST ORDER.

CEREBRAL CONGESTIONS.

A GREAT number of morbid states, differing very much from each other with respect to the functional disturbances accompanying them, have been referred to congestions or hyperemias of the brain; which states sometimes give rise to all the symptoms characterising a severe attack of apoplexy, and are capable even of producing death more promptly than real cerebral hemorrhage, whilst sometimes they simulate acute inflammation of the meninges, &c. The cases now about to be given, are instances of these varied forms of cerebral hyperemia; they will also show how different are the symptoms which may be determined by one and the same lesion, whether in regard to the differences which it presents in its intensity, in its progress, in the greater or less rapidity of its production, or with regard even to the difference of disposition in the individuals affected by it.

SECTION I.

CASES.

CASE 1.—*Disease of the heart of long standing—Sudden loss of consciousness and motion—Speedy death—Remarkable injection of the substance of the cerebral hemispheres..*

A woman, fifty-three years of age, entered the hospital Cochin, in the month of March, 1829, presenting the following state:—Face flushed; lips purple; œdema of the lower extremities; ascites; speech uttered with panting; orthopnœa; pulsations of the heart tumultuous, repelling the ear, perceptible in almost all the parts of the chest, except on the right posteriorly; pulse sunk, contrasting by the smallness of its beats with the strength of those of the heart, regular in other respects, and not frequent. Cough of long standing, dry sonorous râle in different points of the chest; digestive functions duly performed; no perceptible disturbance as far as regards the nervous centres. This woman was considered as affected with hypertrophy of the parietes of the heart, with dilatation of its cavities; she was bled, and subjected to the use of digitalis.

Under this treatment, aided by suitable regimen and rest, the dyspnœa and ascites had diminished a little, when one day, on getting up out of bed, she complained of seeing everything turn round her; she scarcely uttered these words, when she uttered a loud scream, put her hand towards her head, and fell down deprived of consciousness, which she did not recover during the remainder of the day, and died that night.

Post mortem. Cranium.—The arachnoid of the convexity remarkably dry. The grey substance of the circumvolutions has a well marked rose-coloured tint. The medullary substance, which forms in a great measure the nervous mass situated over the ventricles, is traversed by a very great number of red points, each of which constitutes the orifice of a vessel gorged with blood. The ventricles contain very little serum ; the optic thalami and corpora striata less injected than the rest of the hemispheres. The sinuses of the dura mater were gorged with liquid black blood.

Thorax.—The lungs were infarcted with an enormous quantity of frothy serum, which flows out in great quantity at every incision made in their parenchyma. Heart very large; its parietes thickened, and its cavities dilated. Its different orifices free ; at the base of one of the aortic valves are some slight ossifications, which present no obstruction to the freedom of its action. The aorta presented no other lesion than some cartilaginous and bony patches incrusting its parietes.

Abdomen.—Slate-coloured tint and enlargement of the papillæ of the gastric mucous membrane over a great part of its extent ; liver gorged with blood ; spleen small and dense.

Remarks.—Here was a case in which, before the post mortem, one might have supposed great cerebral hemorrhage had taken place, the patient having presented the symptoms characterising a violent attack of apoplexy. The scream she uttered, her putting her hand towards her head before falling, indicated that she experienced a painful sensation in the brain. Such a cry does not usually precede an attack of apoplexy, it being rather connected with epileptic fits. After once falling without consciousness, she remained deprived of sensation and motion, and at the end of some hours she died in the way that apoplectics generally do ; yet all that was found in the brain, was a greater than ordinary injection of the two hemispheres. This certainly is a very slight lesion to account for such violent symptoms. It is probable that a similar injection takes place momentarily in persons who are momentarily seized with giddiness and other signs of cerebral congestion, without any thing fatal resulting from it. This same injection is also, no doubt, the only lesion in the brain in those cases where all the symptoms of an attack of apoplexy come on, which, after continuing some hours, entirely disappear, without leaving any trace of their existence. It is not probable that in such circumstances hemorrhage takes place ; for the blood once effused into the cerebral pulp could not be so soon absorbed. We have seen cases of this kind in which complete hemiplegia, preceded and accompanied by loss of consciousness, and by stertorous respiration, likewise disappeared after the lapse of some hours. In those cases where loss of motion and sensation, limited to one side of the body, seems to indicate a more deep-seated lesion in the cerebral hemisphere of the opposite side, is it still possible that there may be but mere cerebral hyperemia without any escape of blood from its vessels? The following will prove that such may be the case.

Case 2.—*Attack of apoplexy supervening on a chronic affection of the thoracic and abdominal organs—Hemiplegia—Death two days after this attack—Considerable injection of the substance of the cerebral hemispheres—No other lesion in the nervous centres.*

A man, seventy-two years old, entered the Maison Royale de Santé, the 7th July, 1830. Six months before he had been operated on for hydrocele. When eighteen years old he had a copious hemoptysis ; more than three glasses full of blood had been expectorated by him in the space of fifteen hours. Since then no return of the hemoptysis, but all his life he was subject to a cough. When we saw him, we discovered, on examining the abdomen, a considerable tumour, which could be traced into the right hypochondrium, the flank of the same side, to the epigastrium, to the level of the umbilicus, and even into the left hypochondrium : this tumour appeared to us to appertain to the liver ; it could be pressed without causing pain. For the last two months only the appetite was lost ; the patient had neither thirst, nausea, nor vomiting ; the stools were for a long time frequent and of little consistence ; the tongue was covered with a thick, somewhat viscid white mucus ; there was an evident fluctuation in the abdomen ; the legs were œdematous, and the bursæ seemed infiltrated with a considerable quantity of serum. A very loud respiratory murmur, without any râle, extending over the entire chest; pulse was frequent; skin hot; a copious deposition of rosacic acid appeared in the urine. During the two following days the tongue became red and dry. On the 10th, at about three o'clock in the afternoon, new symptoms suddenly supervene: the patient loses consciousness all at once; and at our visit on the next morning, we were told that the preceding night he had had an attack of apoplexy. His state then was as follows:—He lies on his back; face much injected; eyes closed; on raising the eye-lid, we observe the globe of the eye move slowly; on bringing the finger near it, he quickly depresses the eye-brows; the pupils moderately dilated, and equally so on both sides; the right commissure of the lips slightly drawn upwards; the left upper extremity, on being raised, falls again by its own weight as an inert mass; no pain evinced on pinching it. The skin of the left lower extremity equally deprived of sensibility, and it seems deprived of all power of motion. On the right, however, the extremities are capable of performing some movements; when the right arm is raised, it is retained in the air by the patient, and does not fall again instantly as the left. Intelligence entirely gone; the patient resembles a person in a profound sleep; we cannot see his tongue. The pulse lost the frequency it had the preceding days. (Bleeding to sixteen ounces—blisters to the legs—purgative lavement.) During the day, the patient gave some signs of consciousness, and spoke a little. On the following morning there was a visible improvement—he answered questions with precision—lips and tongue in the natural state—he was also able to perform some motion with the extremities of the left side; but these limbs were evidently weaker than those of the right side; their sensibility was also less; pulse had resumed some frequency. Towards noon all consciousness was again lost; face very much injected, and up to the following morning he remained in a state of coma, from which nothing could arouse him. At our visit at eight o'clock, we find him absolutely in the same state as on the preceding evening; respiration stertorous; he died at noon.

Post mortem, nineteen hours after death.

Cranium.—The meninges very much injected; sinuses of the dura mater full of blood. Through the entire extent of the cerebral hemispheres, every slice of the nervous pulp presented a very remarkable number of red points. In some places these red points, which are the orifices of so many vessels with blood, are so densely collected, that there result from them bright red spots, a franc piece in diameter.

Thorax.—Close adhesions of the left pleura above and behind; the bronchi considerably dilated; at the summit of the left lung, there is a black colour, as also an induration of several lobules. In the midst of these lobules, which were become impermeable to air, were found several small bony concretions, all nearly the size of a grain of barley. These concretions are as hard as real bone: several of them were ramified. Beside them were found other concretions of softer consistence, like lime on which a little water was thrown. Close adhesions of the pleura towards the summit of the right lung; in this summit were discovered cavities communicating with one another, which might at first be taken for caverns, but which a closer examination showed to be bronchi very much dilated. Around them were several lobules, black and hard; liquid black blood filled the right cavities of the heart; the left ventricle empty; a black clot, of some consistence, distended the left auricle; a little ossification at the base of the aortic valves. Some small bony patches scattered over the aorta.

Abdomen.—Limpid serum in the peritoneum; on the inner surface of the stomach, towards its small curve, was an ulcer about the breadth of a five franc piece, at least, with everted edges. The tissue constituting its bottom and edges possessed all the characters of encephaloid matter. The liver very voluminous; about two-thirds of it were changed into encephaloid substance: we observed, there also, first a great development of the circumvolutions of the yellow substance; in several points, a bright red colour seeming to depend on an unnatural development of the vascular tissue: secondly, in other parts was found mixed with the tissue of the liver a pale greenish substance, possessing all the characters of fibrine which had lost a considerable part of its colouring matter, such as is often found in the cavities of the heart: thirdly, on removing still more of its colouring matter, this substance appeared changed into encephaloid matter; spleen very dense and hard. Between the spleen and kidney was found an encephaloid mass of the size of a pullet's egg; two other smaller masses, the size of a nut, were attached to the great epiploon.

Remarks.—This case resembles the preceding in the rapid manner in which the symptoms came on, as well as in the nature of the latter; here again is a group of symptoms similar in every respect to those characterising an attack of apoplexy; and on opening the body we find not a trace of hemorrhage in the brain, but only a very remarkable injection of its vessels. This injection, which gave an almost uniform red tint to some parts of the brain, was equal in both hemispheres; and yet motion was abolished in only one side of the body, precisely as in cases where one of the hemispheres has become the seat of effusion of blood. Another instance of the inadequacy of our present means of investigation to explain the infinite variety of the symptoms by anatomical lesions. And, observe, we cannot here even call the play of sympathies to our aid; for certainly the hemiplegia did not depend on them. The latter symptom disappeared twenty-four hours after it occurred, then it returned, and this circumstance might have inclined one to think that the cause which produced it, was not itself connected with any serious lesion of the brain: the intelligence also returned for a time; but that is also observed in cases of cerebral hemorrhage. The hemoptysis, which appeared in early life, and never returned, as also the bony concretions in one of the lungs, the dilatation of the bronchi of the other lung, and the morbid structures seated in several of the abdominal viscera, render this a very remarkable case.

CASE 3.—*Signs of cerebral congestion existing for several years—On a sudden hemiplegia of the right side not preceded by loss of consciousness, subsequently sudden abolition of intelligence, coma, and death.*

A woman about fifty years of age entered the Hôpital Cochin with an ascites of several months' standing. She stated that for ten years she had scarcely passed a week without being affected with dizziness so great as to oblige her to seek support to prevent her from falling. These dizzinesses used to last for some minutes; they were accompanied with tinnitus aurium, and often when they ceased, the patient used to feel a pricking sensation at the ends of the fingers, which were occasionally as if numbed. *There are some days,* she says, *when the objects which I touch are separated from my hand by a piece of velvet.* However, she never lost consciousness; intellect clear and memory good. She expressed a great wish to be tapped, and I yielded to her request. After the fluid was removed, I discovered in the right hypochondrium a large tumour which extended to the navel, which at this part terminates in a blunt edge, and resembles in every way an enlarged liver. This tumour is found in the epigastrium; it disappears towards the left hypochondrium. Three days after the tapping the patient became weak, her tongue became a little dry, when, after another attack of dizziness without loss of consciousness, she felt, as often before, a numbness of both hands, but principally of the right; this numbness continued longer than usual: she fell asleep about eleven at night; on awaking she could not move the extremities of the right side. The following day, complete hemiplegia of the right side; the sensibility of the paralysed limbs still perfect; intellects good. The two days following the hemiplegia continued. On the third day after the hemiplegia appeared, speech altogether suspended; she can no longer give any sign of intelligence; the four extremities when raised fall as inert masses; eyelids closed; and when we raised them, the globes of the eyes remained immoveable. Coma then came on, and in two hours after the respiration became stertorous, and she died.

Post mortem. Cranium.—Vessels of the cerebral membranes gorged with blood; remarkable rose-coloured tint of the grey substance of the circumvolutions; unusual injection of the medullary substance of the cerebral hemispheres, equally marked on both sides.

Thorax.—Great infarction of the lungs; heart sound.

Abdomen.—Occupied by an enormous tumour, which conceals all the other viscera. This was an enkysted dropsy of the right ovary; it consisted of two parts; the upper part solid, which by reason of its situation, form, and relations, had been looked on as a tumour of the liver; the lower one was softer, and gave on pressure a manifest sensation of fluctuation. Internally it consisted of a great number of cells, which contained various sorts of fluid.

Remarks.—Here is another form of cerebral phenomena; and on examination the same state of the nervous centres, sanguineous congestion of them, and nothing more. In this case the patient had been for several years threatened with apoplexy; then at the end of one of those giddinesses to which she was subject, she was struck with hemiplegia, and soon after died amidst the total suspension of the functions of the life of relation. There is this notable difference between the present case and that which precedes it; it is, that in the one the loss of consciousness coincided with the hemiplegia; whilst in the case now before us, the paralysis preceded the loss of consciousness. Thus all the combinations of symptoms produced by cerebral hemorrhage may co-exist with a simple sanguineous congestion of the encephalon. In the following case we shall see other symptoms appear, which are no longer those of simple hemorrhage, and are ordinarily regarded as more particularly connected with softening of the brain.

CASE 4. — *Pulmonary phthisis — Sudden loss of consciousness with permanent flexion of the left upper extremity—Death twenty-seven hours after the appearance of these symptoms—No other lesion in the nervous centres, except a bright red injection of their substance.*

A man, thirty-six years of age, entered the hospital La Pitié with all the signs of phthisis already far advanced; for some days he complained of a rather acute pain towards the right temple, and a slight numbness of the extremities of the left side; then on leaving his bed one morning he fell suddenly, deprived of consciousness. When carried to bed he did not come to himself, and the following morning we found him in the following state:—Face very much injected; his attitude that of a person asleep; answers no questions, and appears quite a stranger to every thing passing around him. The left commissure of the lips slightly drawn up. The tongue cannot be seen; the fingers of the left hand strongly flexed on the palm of the same hand, and cannot be extended. The left forearm is also flexed on the arm, so as to form with it a very acute angle; the right upper extremity when raised falls again as an inert mass, as do also the two lower extremities; pulse small, not frequent; respiration embarrassed. Two hours after we left the patient, the two upper extremities were agitated by convulsive movements which did not last, and in the afternoon he died.

Post mortem. Cranium.—The substance of the two cerebral hemispheres was very much dotted with numerous red points.

Thorax.—Tubercular excavations in the two lungs ; heart firm, with slight hypertrophy of the parietes of the left ventricle ; black liquid blood in its cavities.

Abdomen.—Greyish tint on the inner surface of the stomach ; numerous tubercles in the small intestine ; liver and kidneys gorged with blood.

Remarks.—The symptoms here were similar to those which so often announce softening of the brain, and yet there was no trace of such a lesion ; and, notwithstanding the difference in the phenomena on both sides of the body, a sanguineous congestion, equal on both sides, was all that was discovered. Why was there flexion of the limbs in this case, and not in the preceding cases? Anatomy does not inform us. Is it not a circumstance worthy of remark, that the four cases of cerebral congestion now reported regarded individuals labouring under chronic affections at the time the brain became congested in them? In three of them hematosis was for a long time vitiated ; they were meagre, bloodless, and appeared to be in a condition entirely opposite to that which is usually laid down as favouring cerebral congestions. An additional example to prove that the facility with which local hyperemias are produced, is not always in the direct ratio of the plethoric state of the subject. The following will confirm this assertion still more, since it will be in another phthisical patient, that we shall see cerebral congestion to supervene, but with quite other symptoms.

Case 5.—*Febrile delirium followed by coma, which came on during the progress of a pulmonary phthisis—The cerebral hemispheres marked with bright red points.*

A boy, eighteen years of age, entered the Maison de Santé, 16th July, 1830, in a complete state of delirium. We ascertained, from those who brought him, that having been ill a long time, and having had several times abundant hemoptysis, he had been seized, without any known cause, on the night of the 14th July, with a violent headach, which was taken to be a mere megrim. This pain of head continued all the night, and the following morning it was complicated with vertigo and tinnitus aurium. He was desirous to get up, but he soon lay down again in consequence of the dizziness he felt when he stood up. All the day he continued to complain very much of his headach. In the evening delirium commenced. He was brought to the Maison de Santé on the 16th, in the morning, when his state was as follows :—Face red ; eyes injected, and in continual motion ; foam at the mouth ; delirium complete ; extraordinary loquacity ; constant moving of the limbs ; tongue whitish, moist, a little red at the apex ; abdomen soft ; stools passed involuntarily ; pulse very frequent ; skin hot and moist (bleeding to sixteen ounces ; mustard cataplasms to the legs). During the night he uttered loud cries. On the 17th the delirium still continued. He was bled again to the same amount as before. When the blood ceased to flow, convulsions of the limbs came on, which stopped after a few minutes. On the 18th, profound coma ; can neither see nor hear ; the four extremities in a state of complete resolution ; conjunctivæ very red ; pulse very frequent (twenty leeches were applied to the neck). In the evening he suddenly emerges from coma, utters loud screams, and it became necessary to restrain him by force in bed. The coma returned towards midnight. On the morning of the 19th, we found the features quite altered ; prostration of strength greater ; pulse more frequent (sinapisms to the lower extremities). He died the following night.

Post mortem. Cranium.—Vessels of the meninges very much injected ; the circumvolutions marked with a rose-coloured tint ; the medullary substance of the hemispheres very much dotted with red points ; a few drops of limpid serum in the ventricles.

Thorax.—Tubercles in every stage in the two lungs ; an immense cavern in the summit of each of them.

Abdomen.—An extent of the gastric mucous membrane equal to about a five franc piece, near the pylorus, marked with red points ; some tubercles in the small intestine; general paleness of its mucous membranes, except about six inches above the cæcum, where it is injected. This injection was also found in the cæcum, and in the ascending colon, and in its sigmoid flexure.

Remarks.—This case presents symptoms altogether different from those which the four cases preceding it presented. They are similar to the symptoms of acute meningitis, or to those produced by certain gastro-enterites, which re-act on the nervous centres. Was the congestion, then, of which the traces were discovered in the brain, the real cause of the nervous symptoms? If not, where is the cause? Is it to be referred to the bright red injection presented by the termination of the ileum, and a part of the large intestine? But how often have we not found a similar injection, without anything analogous in the symptoms? If we admit that the entire disease may be explained by the state of the organs after death, we shall refer the entire matter here to the cerebral congestion, either primitive or consecutive to the intestinal injection, which we shall call entero-colite; and if we be asked, why, of five cases, where the cerebral lesion is the same, there are not two resembling each other in the symptoms, we shall not be able to solve this objection otherwise than by admitting in each what has been conventionally styled idiosyncrasy. There remains another mode of interpreting the facts; it consists in admitting, that this sanguineous congestion, which is produced in all our cases with functional disturbances so varied, is itself but an effect, and that it is not given us, with our present means of investigation, to ascertain the cause which produces this congestion, at the same time that it creates those different groups of symptoms which we traced in each of the five preceding cases.

RECAPITULATION.

The cases which have been just now reported, have shown the principal forms symptomatic of hyperemia of the cerebral hemispheres. On combining with those few cases which ended in death, several others of the same kind which terminated favourably, we have been led to lay down, that cerebral congestion may present itself to us in one of the eight following forms:—

The first form is characterised principally by dizziness of greater or less intensity: the patients may be affected at the same time with pain of head, dazzling, tinnitus aurium, momentary aberrations of vision, temporary embarrassment in speech, a sense of formication in the limbs, and sometimes at the face. The countenance is generally flushed, eyes injected, pulse in general not frequent, and of variable strength. This state may last but for some moments, or some hours; but it may also be prolonged for several months, nay, continue even for several years. In some persons it shows itself but once; in others it reappears at intervals more or less remote. We have seen a man fifty-nine years of age, who, for the last thirty years, had not passed a single day without having in different degrees one or other of the symptoms mentioned in the preceding paragraph. Another person had experienced them since the age of thirty years till he was thirty-four. He then became completely freed from it till the age of forty-eight, at which time he was again attacked with violent dizziness. We noticed the case of several persons in whom every year, nearly in the same month, these attacks of dizziness reappeared. In some females they manifest themselves regularly at the return of each menstrual period.

After this dizziness has lasted a shorter or longer time, it may happen that they attain all at once such an intensity as to be changed into a sudden loss of consciousness; but the latter may likewise supervene without having been preceded by dizziness. It is this sudden loss of consciousness, with or without preceding dizziness, which characterises the second form of cerebral congestion. In this form the patients fall to the ground, deprived suddenly of all intelligence, sensation and motion; but if their limbs be raised, they do not fall back again by their own weight, and some patients can sustain them in the air. There is not then, properly speaking, any paralysis. They may remain in this state from some minutes up to twenty-four or thirty hours: then they come to themselves, and are quickly restored, without retaining any lesion either of sensation or motion. Others, after having come to themselves, retain for some days a little difficulty in the performance of some of the functions of the life of relation. Thus their speech is embarrassed, or their different movements are difficult.

At the same time that the patients fall deprived of consciousness, they may be struck with paralysis, either general, or confined to only one side of the body. This is the third form of cerebral congestion. But almost at the same time that the loss of consciousness disappears, the paralysis is also seen to disappear, so that cerebral hemorrhage cannot be admitted to have taken place in this case. The cases we have cited prove the possibility of this paralysis, without any effusion of blood having taken place into the brain. Instead of general or partial suspension of motion, this function may be performed in a manner disorderly and irregular, and without any participation of the will. Then at the same time that there is loss of consciousness, there are observed, either different convulsive movements, or permanent contraction of a certain number of muscles; all these symptoms last at the utmost for some hours, they then disappear, without leaving any trace behind. This constitutes the fourth form of cerebral congestion. In a fifth form, there is no longer loss of consciousness; it is paralysis that comes on at the very first, sometimes limited to certain muscles of the face, sometimes extended to the entire of one side of the body. This paralysis disappears very promptly, oftentimes a few hours after having commenced; and from this circumstance it is not to be presumed that it is connected with a hemorrhage, or softening. Our fourth case actually proves the contrary. The course of this paralysis was very remarkable in the following case. A middle aged man working in the quarries near Paris, was suddenly seized, on finishing his dinner, with a numbness of the right hand; an hour after the entire upper extremity was totally deprived of motion; no pain is felt in it: nor does he complain of his head. At 5 o'clock in the evening, he had a sense of formication in the right foot: soon the power of motion was equally lost in the lower extremity of the right side: he entered the hospital Cochin. On the following morning the hemiplegia of the right side was complete; the sensibility of the paralysed limbs was still retained; he cannot move the right cheek, and when he speaks, the left commissure of the lips is drawn up; the direction of the tongue is straight, intelligence perfect; he feels a numbness (this is his own expression) towards the frontal region; he was bled to sixteen ounces. In the course of the day he was able to make some slight motion with the extremities of the right side. On the following morning there was no trace of paralysis. This certainly is not the way in which the effects of cerebral hemorrhage disappear, or of any lesion affecting the interior of the nervous mass.

The sixth form of cerebral congestion is characterised by the sudden appearance of convulsive movements, partial or general, without preceding loss of consciousness. These movements promptly disappear, without leaving any trace behind them. They may also come on, after the persons have experienced attacks of giddiness for a shorter or longer time, and the latter may even survive them. In a seventh form, the cerebral congestion no longer produces coma; it no longer exercises any perceptible influence on the movements; the intelligence is the function here especially disturbed; violent delirium is observed, accompanied with great development of muscular strength; most frequently, some time before death, the delirium is replaced by a state of coma, which becomes more and more profound: however, we have ourselves seen cases in which, up to the moment of death, the patients retained great agitation of the limbs, and ceased not to speak and vociferate. The most remarkable case of this kind which we met was that of a middle-aged man, who for several hours uttered incessantly cries so loud as to disturb the rest of the entire ward. Suddenly he was no longer heard; when we approached his bed he was dead. A thunderbolt could not have struçk him more promptly.

On opening the body no other lesion was detected except considerable injection of the nervous mass. We shall now notice the eighth form of cerebral congestion, of which our fifth case presents us an example. In this form we see continued fever appear at the commencement, during which those symptoms principally predominate, which appertain to the first form of cerebral congestion already described. We particularly observed this form in some young soldiers, who were admitted in considerable numbers into our wards at La Pitié, in the beginning of the summer 1831. After laborious exercise, several of these soldiers were seized with violent pains of head, vertigo, ringing of the ears; some even fell suddenly deprived of consciousness, and on coming to themselves they remained with the symptoms above detailed. On entering our wards, a little time after the attack of their malady, they presented to us the following state:—Face red; eyes injected and moistened with tears; ringing of the ears, vertigo; great dizziness, which prevented them from standing erect without being threatened with falling; frequent epistaxis; general debility; continual tendency to sleep; pulse strong and frequent; skin hot; no appreciable alteration with respect to the digestive or respiratory organs. This group of symptoms lasted from between three to twelve days; almost all of them were bled; some were merely subjected to the use of diluent drinks. By degrees the fever lessened, according as the symptoms of cerebral congestion disappeared. No doubt it was not demonstrated that all the disease in these cases was in the brain; perhaps there existed only mere general over-excitement, in which this organ participated. But the prevailing symptoms were always those of cerebral congestion, and, on the removal of the fever, these were the only symptoms observed, and the only therapeutic indication was to combat them. None of these cases terminated fatally: in one patient only there was momentary delirium; in others, the attacks of dizziness were for some days so violent, that we dreaded lest they should terminate in apoplexy.

Let us now consider the causes, under the influence of which cerebral congestions more particularly develop themselves. We shall first see what influence the different degrees of atmospheric temperature possess over cerebral hyperemia; and first, with respect to the influence of an elevated temperature: this is represented by the portion of the thermometric scale included between [*]20° c. and [†]50° c. above Zero. For, at a higher temperature than that of 50°, man can no longer prolong existence beyond a few minutes. From 50° to [‡] 40° c. man resists, or dies rapidly with all the signs of cerebral congestion. From 40° to [§]35° c. the same phenomena are still observed. We have had an opportunity of examining the bodies of some who died under the influence of this temperature: there was found in them sometimes simple cerebral congestion, sometimes effusions of blood into the substance of the brain. Among the cases of this sort which we might cite, we found few as interesting as the following [||]:—

Three labourers, occupied in three different places in getting in the harvest during days when Reaumur's thermometer marked [¶] 40° in the sun, died suddenly. The circumstances accompanying these three deaths could be ascertained only in two of them, for the third was found dead. According to the eye-witnesses, the two former could not have left their work more than five minutes before their death. They turned round, putting their hands forward, as if they had been deprived of sight, and must have expired at the moment when they appeared merely to wish to sit down. The individual who died first, that is, on the 6th of July, was a man of mature age, but putrefaction made such rapid progress, that it was impossible to keep his body till the proper time for examining it.

---

[*] 68° Fahrenheit.

[†] 122° Fahrn.

[‡] 104° Fahrn.

[§] 95° Fahrn.

[||] *Bibliothèque Médicale*, tome 70, p. 250.

[¶] 122° Fahrn.

The second died on the following day. It was a woman, twenty-one years of age. Her body was examined. Muscles well developed ; all the articulations were completely rigid ; on the back and face were livid spots, and already the odour of putrefaction began to manifest itself ; abdomen tympanitic, smooth, and free from spots. On examining the cranium, the hairy scalp was found thick, and well furnished with hair ; the bony case, on the contrary, was extremely thin, but sufficiently furnished with diploë ; the dura mater was natural in every part, and no effusion was observed between it and the bones of the cranium, nor was any found over or under the pia mater, but the veins and arteries of these two membranes were gorged with blood. The brain presented no irregularity, only its substance was very soft ; the ventricles contained a little more serum than natural ; the lungs had contracted adhesions with the pleura costalis, but these adhesions were constituted only of a sort of filaments rather than membranes ; no sign of inflammation of the lungs or pleura, nor any effusion ; the lungs were very large, filled with air ; the pulmonary vessels were gorged with blood, and the bronchi filled with frothy mucus ; the pericardium adhered to the heart just as the lungs did to the pleura costalis, by filaments, and contained a considerable quantity of serum ; size of the heart natural ; right ventricle a little distended, filled with liquid black blood ; the left ventricle was contracted and empty. On opening the abdomen, an infectious odour was diffused ; the intestines were filled with gas, their convolutions, lodged in the pelvis, presented some red spots ; the portion of intestine in the vicinity of the gall-bladder had a deep tinge of yellow ; the gall-bladder contained but a small quantity of natural bile ; all the other viscera were sound, with the exception of the organs of generation ; the fundus of the uterus was intensely red ; the right ovary had contracted adhesions to the Fallopian tube and the peritoneum ; its vesicles were filled with black coagulated blood ; the cavity of the uterus contained a little liquid blood ; this was removed with a sponge, but merely compressing the parietes of the womb caused a new quantity to reappear through an immense number of vascular orifices ; besides, there was obtained, on pressing the neck and orifice of the uterus, a fatty yellowish substance, every way like to the coat with which the vagina and labia majora were covered. The diameters of the uterine cavity were much larger than natural, and the uterus itself, far from being flattened, had the form of a pear. In the cavity of the pelvis there was found an effusion of about two ounces of blood.

The third person died suddenly on the 8th July. This was a stranger, a woman between forty-eight and fifty years old. We proceeded the following day, in the morning, to examine her body. She was of the middle size, rather fat than otherwise. All the articulations were rigid ; the back was traversed by blue spots ; almost the entire face was covered with them ; the face, from the chin to the nose, was absolutely livid ; several also were to be seen on the chest, the size of which varied from that of a lentil to that of a twenty sous piece. These spots had precisely the appearance of petechiæ, and yielded, when cut into, some liquid blood. The body was still warm, but already it exhaled a fetid odour ; the abdomen was tympanitic ; the integuments, and bones of the cranium, presented nothing extraordinary ; their vessels, as well as those of the brain, contained some liquid blood ; the cerebral substance was extraordinarily softened ; the lateral ventricles contained a bloody serum ; the cartilages of the ribs were ossified ; the right lung adhered intimately to the pleura costalis ; the left side was quite free. The pericardium presented a slightly inflammatory tint on its inner surface ; the right ventricle of the heart contained a little black liquid blood ; the blood of the left ventricle was red and frothy ; the abdominal cavity contained a pint of serous effusion, the odour of which was putrid ; the intestinal canal was very much distended with gases, and the parts of it near the gall-bladder had a yellow tinge ; the latter was empty.

According as the temperature is lowered, though it should be still considered very much elevated, the phenomena just now mentioned become more rare ; they are still observed from 35° to 30° c. ; but below the latter degree, from 30° to 20° c. (the temperature of our warm seasons), the tendency to cerebral congestions disappears ; and at the latter limit, the frequency of the hyperemia of the nervous centres ceases to be in the direct ratio of the elevation of the temperature. Far from that, observation proves that, in the cold seasons of our temperate Europe, the frequency of cerebral congestions increases. Thus, in Holland, it has been ascertained that, during a period of twenty years, winter was the season when these congestions were most numerous ; after winter, autumn furnished most cases ; then spring, then summer [*]. In a climate very different from that of Holland, at Turin, an average of twenty-five years showed the range of the seasons to be in the following order with respect to the frequency of cerebral congestions : winter, spring, summer, autumn [†].

In Paris, the statistical researches of M. Falret led him to conclude that congestions and hemorrhages of the brain are more frequent in winter than in summer and spring. In 114 cases, which fell under our own observation, in which we noted the month of the year in which the cerebral congestion took place, the following is the result :—

For the months of December, January, and February,	50 Cases.
For the months of June, July, and August,	36
For the months of March, April, and May,	31
For the months of September, October, and November,	17

Very low temperature, as that for example to which our army was subjected at the time of the retreat from Moscow, favour the development of cerebral congestions, as well as a very high temperature.

M. Larrey informs us that most of the persons who died in that retreat were at first affected with dizziness and vertigo ; they then fell into a state of somnolence, which was soon succeeded by profound coma, and finally by death [‡]. The sudden transition from one extreme of temperature to another should also be set down among the number of atmospheric influences, which have produced cerebral congestions in more cases than one. In a word, these congestions find at least an occasional cause of development in the two extremes of temperature, and they are reduced to their minimum of frequency by the influence of a mild and uniform temperature. There are also times, when, all at once, without any known cause, cerebral hyperemias, with or without effusion of blood, are found to occur in considerable numbers.

Baglivi, in 1694, and Lancisi, in 1705, saw apoplexy suddenly become so common in certain parts of Italy, that they have described it as having been in those years really epidemic. Among those attacked with it, some presented the different signs characterising simple cerebral congestion ; the others, and those in great number, had still more ; for after the attack they continued hemiplegic, which would make one suppose that they had had cerebral hemorrhage. Baglivi remarks that this epidemic apoplexy, which struck terror into the population, was preceded by unusual atmospheric circumstances : to a broiling hot summer had succeeded a winter so severe, for the country about Rome, that all the fields were covered with snow, and this severe winter was followed by a summer still hotter than the preceding, during which, for the space of five months, there fell not one drop of rain; then the following winter was remarked for constant rains.

---

[*] Annales d'Hygiène Publique et de Medecine Légale, ii. 234.

[†] Annales d'Hygiène Publique et de Medecine Légale, ii. 234.

[‡] Campagnes, tome iv. p. 127.

We know nothing positive regarding the influence which the greater or less quantity of electricity, with which the atmosphere is charged, may exercise on the production of cerebral congestions. Here, however, is a fact which may be adduced to show, that electricity, employed as a therapeutic agent, may at least favour the development of these congestions. A man, after having been for a long time subject to frequent attacks of dizziness, induced by cerebral congestions, and which disappeared under the influence of blood-letting and purgation, had an attack of apoplexy with hemiplegia, loss of speech, grinding of the teeth; respiration irregular, sometimes slow, and sometimes frequent; pulse intermittent, and sometimes scarcely perceptible, without, however, any sign of gastro-intestinal irritation; repeated blood-letting and revulsive purgatives soon restored him to a tolerable state. At the end of some months every brain symptom disappeared; pulse more regular; the use of speech had nearly returned, as also some degree of motion in the affected limbs, when Dr. Strambio wished to try electro-puncture in order to restore innervation to the half-paralysed side. Dr. Fantonelli performed the operation in the following manner: he introduced a needle into the lower part of the neck, on the side opposite the paralysed limbs, then another needle into the external malleolus of the affected leg; a metallic wire, communicating with the two needles, was brought in contact with a voltaic pile of five discs only, so that the negative pole corresponded with the needle of the affected part: the introduction of the needles was not painful; but at each stroke of the pole, strong pains and violent contractions were manifested in the muscles nearest to the needles, and principally in those of the part affected. After five or six electric shocks, it became necessary to desist, the pain becoming intolerable: the electro-puncture was repeated three times after one day's interval. After the first experiment, the patient was more cheerful, and performed the several movements with more freedom; at the second, he experienced some uneasiness; and at the third he was attacked with violent fever, with all the appearances of a cerebral congestion. Bleeding and revulsives soon quieted these symptoms; but his former state returned. At present, his speech is nearly gone, and the movements of his leg are very weak. Arnica and rhus radicans were tried, but to no purpose, nay, rather with disadvantage. More positive researches than any yet made, are necessary to establish, how far a diet usually strong and exciting directly influences the production of cerebral congestion. In order that it should do so, we think that there must be at least a disposition on the part of the individual. Alcoholic liquors will beyond all doubt produce cerebral congestion. Nothing resembles some of the forms of cerebral congestion described by us more than intoxication. We have had twice an opportunity of opening the bodies of persons, who, after indulging in strong liquors to excess, fell down drunk dead * (ivres morts), according to an expression consecrated by use. What we found was as follows: In both the pia mater covering the convexity of the cerebral hemispheres was very much injected; the grey substance of the circumvolutions participated in this injection; the entire substance of the hemispheres was traversed by a great number of red points; the ventricles contained a moderate quantity of serum, the cerebellum was also injected, as well as its membranes, but not more than the brain. In no part was the consistence of the nervous mass altered. We found neither in the ventricles, nor elsewhere, any odour of alcohol, as was discovered within these ventricles in an individual whose case is given in Dr. Cooke's work on Nervous Diseases. In this latter case, the body was opened immediately after death; there was found in the ventricles a clear fluid, which had the taste and

---

* The expression which use has consecrated among us, namely, *dead drunk*, is used to signify not precisely the same thing as is here meant by *ivres morts*.—Tr.

smell of alcohol, and which took fire on being brought near a burning body. In one of the cases we examined, the mucous membrane of the stomach presented, in several parts, near amounting to one third of the stomach, a surface dotted with bright red points; in the other, the gastric mucous membrane was of a white colour; it was not softened in either case.

Alcoholic liquors have not only caused cerebral congestions; they have also sometimes produced hemorrhage either around the brain into the sub-arachnoid cellular tissue, or into the nervous substance itself. These facts prove beyond a doubt, that alcoholic liquors produce drunkenness by acting directly on the brain, and not through the intervention of the stomach. Here is what was observed regarding the symptoms in one of the abovementioned cases (the second). A man was brought to the La Charité about an hour after having drunk an enormous quantity of brandy and other alcoholic liquors. For the last half hour, he had been in a state of the most profound coma; skin seemed insensible; respiration stertorous; pupils exceedingly dilated; pulse frequent and full. This state lasted without any change for twenty-four hours; it then ceased, and was suddenly replaced by furious delirium; the latter lasted about fifteen hours; at the end of this time the coma returned, the respiration became more and more embarrassed, and the patient died. We have already seen the lesions found on the dead body. Active treatment was employed; he was twice bled; thirty leeches were applied to the neck; his head was covered with ice, and his lower extremities were surrounded with sinapisms. This group of symptoms, as well as the post mortem examination, sufficiently prove the direct influence exercised on the brain by alcoholic preparations.

A great number of substances, ranked as narcotic poisons, have commonly the effect of determining in the brain a greater or less congestion. But, certainly it is not by this congestion alone, that the special phenomena produced by each of them can be explained. Let a man have been poisoned by alcohol, by opium, belladonna, tobacco, digitalis, camphor, prussic acid, &c., there will always be found in the brain, when examined after death, one and the same modification, which will vary only in intensity; this will always be an hyperemia; and yet, what can be more dissimilar than the functional disturbances to which the use of these substances shall give rise? Beyond the hyperemia, the only phenomenon which appears to us after death, there are then, in the brain, other modifications produced, which are no longer proved by the scalpel, but by the diversity in the nature of the symptoms observed during life. It is not then the cerebral congestion, which is the cause of the specific symptoms which are produced by the different substances just named; this congestion is but one of the elements of the morbid state to which they give rise; a secondary element, the intensity of which does not increase with the severity of the symptoms, and which may even be wanting, without the latter ceasing to exist. Is it true that the specific symptoms produced by each of them, may be explained by the influence which each of them exercises over a particular part of the encephalon? Is it true, for instance, that opium acts especially on the cerebral hemispheres, alcohol on the cerebellum, belladonna on the tubercula quadrigemina? This is not the place to discuss the value of the physiological experiments, by the aid of which an endeavour has been made to establish their specific actions. All that we should say is, that, hitherto, the observations made on man have not sufficiently demonstrated these results, neither have they disproved or invalidated them. However, we shall remark, that in those two cases of poisoning by alcohol which we have above mentioned, the congestion was seated in the cerebral hemispheres, as well as in the cerebellum, and that the latter was not the seat of any specific lesion, at least of one which our present means of investigation will permit us to recognise. Besides, nothing is more variable, as every body knows, than the influence exercised on the encephalon by the different substances whose action we here examine. There are, in this respect, individual susceptibilities, instances of which have fallen under the observation of every medical man.

After having considered some of the external circumstances, which, by the effects they produce on the animal economy, may favour the development of cerebral hyperemia, let us now direct our attention to the economy itself, and let us try whether it will not present certain conditions, which may also have their share in the production of encephalic congestions. Among these conditions we find some states of the brain itself. Thus, forced exertion of the intellect is an unquestionable cause of cerebral congestion. We knew a young man, twenty-seven years of age, who, after having devoted himself, for a month unceasingly, to very painful mental exertion, fell down suddenly, deprived of consciousness and motion; he was considered as struck with a severe attack of apoplexy; he was immediately bled; at the end of an hour he recovered the use of his senses; he was not paralysed, but the limbs on the right and left were as it were benumbed; he stammered; recovered but with difficulty the thread of his ideas, and he stared at those around him with an astonished, and, as it were, stupid air; these phenomena lasted forty-eight hours, continually diminishing; then they disappeared. There remained, however, a certain vagueness in his ideas, which did not leave him till he remained for some time in the country. Strong mental emotions, have, more than once, produced cerebral congestions, some of which have ended fatally*. Certain diseases of the brain have also the effect of producing in this organ a congestion, which has been erroneously taken for the very cause of the disease; this is the case with epilepsy; but though not causing the attack itself, the congestion which accompanies or succeeds it, becomes itself, in its turn, the cause of certain symptoms. It is on this that the cerebral phenomena seem to depend, after the fit has terminated; as certain disturbance of the intellect, or else a state of coma which lasts for a shorter or longer time, or, again, certain disturbances of motion, as paralysis, or a momentary contraction. The congestion which takes place in the brain of epileptic patients, during the fit, leaves also traces on the face. Thus, several epileptic persons present, the two or three days after each fit, slight marks of ecchymosis in the skin of the cheeks, and on the conjunctiva. We have seen one, in whom, at the end of each attack, a broad livid mark, similar to that produced by a contusion, covered the forehead and eyelids; this mark diminished gradually, and there was no trace of it at the end of six or seven days.

Accidental products developed in the brain, old apoplectic cysts existing in this organ, must again be considered as so many thorns, which, from time to time, call around them, as around a centre of irritation, an hyperemia variable in intensity and extent; by the more or less frequent returns of this hyperemia are explained certain phenomena, intermitting as their cause, which appear at intervals in individuals labouring under a cerebral affection of long standing, phenomena most usually combated by blood-letting. In this way, in particular, may be explained those intermitting convulsions to which several children are subject, in whose brain tubercles exist; it often happens that, when once the convulsions have ceased, there no longer remains any cerebral symptom indicating the existence of the accidental product. A remarkable instance of intermitting phenomena produced by a constant lesion. The influence exercised by the different organs, in health or disease, on the production or return of cerebral congestion, merits particular attention. There is no doubt, for example, that, in those who are predisposed, the process of digestion favours the return of these congestions; to a slight degree of those congestions, we may attribute the drowsiness exhibited by certain persons after meals. With respect to diseases of the stomach, they possess, in certain cases, a manifest influence on the development of cerebral congestions. Thus, at all ages, and particularly in infancy, acute gastro-enteritis may be accompanied by symptoms announcing the existence of an encephalic hyperemia. The same happens, though more seldom, in chronic gastro-enterite.

---

* The following observations of Dr. Bright, illustrative of the effects of *cerebral pressure from vascular turgescence*, will not be deemed inappropriate in this place.

The symptoms induced by this state, when it comes on suddenly, are vertigo, loss of consciousness, loss of voluntary power, and not unfrequently convulsions; and hence the difficulty of drawing a correct diagnosis between apoplexy from congestion, and certain epileptic attacks. There is, in truth, scarcely any precise distinction to be recognised; the same state of the vessels apparently inducing both, and the one passing imperceptibly into the other. The convulsive nature of the symptoms marks the chief difference, and this probably depends, rather upon some original irritability of the brain, or on the part which chiefly suffers from congestion, than on any difference in the exciting cause. When cerebral congestion takes place more slowly, either as the effect of narcotic poison, or creeping on with the course of years, or as the result of habitual indulgence, or arising in the progress of disease, it is marked by increasing listlessness, by drowsiness, lethargy, and complete coma; while temporary numbness, or loss of sensation, or depraved sensation, is often experienced, and towards the close not unfrequently convulsion. The first of these forms often admits of being greatly and permanently relieved; and though apt to return, may, by care, be warded off for a long period. The latter, that is the more slow and the chronic form, is less immediately under the control of medicine; but when it depends on the action of narcotics, will admit of being greatly relieved by treatment, allowing the effects of the poison to subside, and when it arises from any definite disease, its removal depends on the cure of the original disorder.—Bright, vol. ii. part 1, p. 198.

The circulatory apparatus may again, by the different states in which it may happen to be, produce different degrees of cerebral congestion*. There can be no

* M. Bricheteau, physician to the Hôpital Necker, has, within the last few weeks, published a volume entitled CLINIQUE MEDICALE de l'Hôpital Necker. One of the essays contained in this work, treats of the influence of the heart and arterial circulation on the brain and its functions—on the connection of hypertrophy of the left ventricle with different diseases of the brain: such as cerebral congestions, apoplexy, &c. We shall cite one or two of the cases contained in this essay:—

CASE 1.—*Symptoms of Hypertrophy of the heart—Attack of apoplexy—Death—Sanguineous congestion in the vessels and sinuses of the brain—Hypertrophy of the left ventricle.*

Louis Germain, fifty-seven years of age, had been ricketty in his infancy; conformation of his chest bad; neck short, head large, and countenance high coloured. For several years back he had been troubled with palpitations, for which he entered the infirmary of the Hospice de Bicêtre, in July 1814. His pulse was then frequent, hard, and irregular; pulsations of the heart very extended, sensible to sight and touch; general bleedings were resorted to; leeches over the region of the heart, &c. The patient was relieved, when, after a hearty meal one evening, he felt all at once a great difficulty of respiration, with loss of consciousness. His mouth was filled with foam, countenance became purple coloured, and he died soon after.

Post mortem.—Sinuses of the dura mater gorged with black and fluid blood; the substance of the brain very consistent, and the vessels of this viscus very much engorged; but there was no effusion of blood, neither into the cerebral tissue, nor into the ventricles. The left ventricle of the heart was rather large; the thickness of its walls more than doubled, and its capacity rather contracted than increased.

CASE 2.—*Attack of apoplexy—Death—Sanguineous engorgement of the brain and its vessels—Hypertrophy of the left ventricle.*

A servant at the Hôtel Dieu, fifty years of age, of an irritable temper, was for a long time troubled with domestic annoyances. His countenance, and particularly his lips, were of a violet-red colour: he was found one morning extended on the floor deprived of consciousness; face purple; eyes fixed, pupils dilated; respiration stertorous; pulse small and slow; skin cold and insensible: limbs in a state of complete relaxation, &c. The patient was removed into one of the wards, where he died in six hours, notwithstanding every attention being paid to him.

Post mortem.—Vessels of the brain gorged with blood; cerebral substance very much injected; no sanguineous effusion discoverable; lungs a little gorged with blood; heart, which was of considerable size, presented a marked thickening in the walls of the left ventricle. The auriculo-ventricular septum was also very much thickened.

CASE 3.—*Symptom of apoplexy—Death—Engorgement of the vessels and of the cerebral substance—Hypertrophy of the left ventricle.*

A man, forty-five years old, felt one day all the symptoms of an attack of apoplexy. He doubt that the variable degrees of force with which the heart drives the blood towards the brain, may have an influence on the formation of encephalic hyperemia. As a proof of it, we have often seen persons, in whom the increase of violence in the palpitations, with which they were habitually attacked, was constantly accompanied with vertigo, dizziness, ringing in the ears; some experienced at the extremities of the fingers a sensation of numbness: these phenomena ceased from the time the palpitations became less violent. Others, who were not habitually subject to palpitations, were uniformly seized with violent beating of the heart, at the time when the signs of cerebral congestion appeared in them; one of these persons told me, that at the moment he commenced to perceive the beating of the heart, he felt these beatings repeated in the head. Increase in the force of the heart's impulse, whether entirely nervous, or owing to hypertrophy of this organ, has then a real influence in the production of cerebral congestions; the preceding facts scarcely admit a doubt of it. But we must guard ourselves against concluding, that all individuals who have palpitations, have, consequently, a cerebral congestion; we have interrogated on this matter several individuals attacked with organic disease of the heart, and several of them in answer stated, that even at the moment when they were tormented with violent palpitations, they had neither dizziness nor vertigo, nor any other sign of encephalic hyperemia. On the other hand, among the individuals in whom there exists a tendency to this hyperemia, there are several who never have had palpitations, and whose heart seems to be in no way diseased. In the five cases of cerebral congestion terminating in death, which we have recorded, there were but two in whom the heart was no longer in the natural state. The other cases of cerebral congestion, which

entered the Hótel Dieu on the same day. Every symptom then disappeared, with the exception of a little embarrassment in his speech, and a slight hemiplegia. Pulse frequent and hard; heart beat with considerable force. The next day the speech was more embarrassed; face pale and swollen; mouth frothy; respiration loud; action of the heart strong (bleeding from the foot, sinapisms, &c.). The next day all the symptoms became worse; complete hemiplegia, respiration stertorous; action of heart very strong, irregular; pulse small; death.

Post mortem.—Cerebral substance firm and sound; vessels very much injected, allowing some drops of blood to escape when the organ is sliced; pons Varolii a little softened; heart large; walls of the left ventricle thicker than natural, whilst those of the right side are in some parts thinned.

Mr. Bricheteau, who appears from this work to be an irreconcilable foe to vitalism and its abettors, and seems determined that the doctrine of the influence of physical laws over vital action shall once more take a prominent place in medical science, deduces from his cases, and his reflections on them, the following six propositions:—

1. The energy with which the heart, more or less approximated to the head, propels the blood to the brain, in health as well as in disease, exercises an influence on the character, the extent of the cerebral functions and even on the instinctive and intellectual faculties.

2. Hypertrophy of the left ventricle of the heart may produce cerebral congestions, *coups de sang,* attacks of apoplexy by the mere anormal impulse which it communicates to the blood; and this consequence is far from rare.

3. The too violent impulse of the blood upon the brain may cause laceration of the cerebral pulp, dilatation and rupture of the vessels, at those points of the brain which receive most of them, which rupture is prompt and easy, when these vessels are attacked with aneurism.

4. The essential and indispensable condition for congestion of or effusion into the brain, as a consequence of hypertrophy of the heart, is the absence of every obstacle to the course of the blood, between the left ventricle and the encephalic mass; such would be, for instance, ossification of the sigmoid valves of the aorta, contraction of the origin of this artery, ossification of the small arteries, &c.

5. Another condition favouring and accelerating the impulse and congestion of blood towards the head, and which must hasten its consequences, is the contracted state of the hypertrophied ventricle. Dilatation produces a contrary effect by increasing the volume of the heart, and weakening its contractile power.

6. The knowledge of the influence of hypertrophy of the heart on the development of cerebral congestions and of apoplexies, is of direct advantage in the practice of medicine, in that it points out with certainty the means of preventing and combating those affections, and often of preventing their return.

have also terminated in death, and have been published by different authors, give nearly similar results. It has been stated that an obstacle to the course of the arterial blood below the arch of the aorta, must produce the same effect as hypertrophy of the left ventricle of the heart, and favour, in the same manner as this hypertrophy, the production of encephalic hyperemias. A case has even been published, in which an attack of apoplexy was considered referrible to a tumour, which compressed the aorta a little below its passage through the diaphragm. If such a cause were real, it certainly should have its maximum of influence in cases where the aorta, immediately below its arch, was considerably contracted, or even obliterated; now in the cases of this kind which have been cited, there is not a word either of congestion or cerebral hemorrhage*.

When any obstacle whatever is opposed to the free return of the blood from the brain to the heart, is the result of this a tendency to cerebral congestion? There can scarcely be a doubt of it, if it be only considered what a person feels towards the brain whose neck is very much squeezed; besides, it has been remarked, that one of the effects of death by strangulation was the production of cerebral congestion. Recent researches have, moreover, shown, that the obliteration of some of the sinuses of the dura mater had, at least more than once, coincided with the formation of cerebral congestions and even hemorrhages. Is it also on cerebral hemorrhage that the extraordinary phenomena depended, which are mentioned in the following case published by Dr. Gintrac, a distinguished physician of Bordeaux†? A child, four years old, was subject from its birth to an affection, which consisted in a momentary suspension of voluntary motion. The attack appeared suddenly; if the child were standing up, the lower limbs became flexed, the trunk was reversed, and he fell. In bed the attack announced itself only by the complete relaxation into which the locomotive apparatus was thrown. During the attack the sensibility was diminished; the senses were a little dulled; the eyes remained open, and immoveable; the hearing was preserved; the intellectual faculties were retained; but the little patient was unable to articulate a syllable. This child died of pneumonia, which came on during measles. On opening the body, M. Gintrac found the superior longitudinal sinus converted into a hard cord, to which veins returned filled with coagulated blood. The parietes of this sinus were thick, dense, and of a yellowish colour; they resisted incision, and sounded under the scalpel; a solid clot filled this sinus. No other alteration was detected.

Another question may be here raised. Should the increase in the rapidity of the blood's course, such as is produced by fever, be ranked among the causes which may produce congestion of the brain? If, in this state of the system, several of the tissues are obviously reddened, may it not be supposed that the same thing will happen to the brain? What is certain is, that we cannot otherwise explain the pain of head, vertigo, dazzling, &c., which accompany every access of fever. In children, this morbid state is accompanied with somnolence; there are adults, also, who cannot have a fever, even of moderate severity, without becoming extraordinarily drowsy, or without having some delirium, which disappears according as the fever declines. Observe again those pandiculations, that extreme sensibility to all external impressions, that fatigue, and dull pains in the limbs, that general debility, which accompany fever when it is well marked; are not all these the phenomena which accompany certain forms or certain degrees of cerebral congestion? The real existence of the latter cannot be questioned in such a case: but far from being the cause of the febrile disturbance, the congestion is often but an effect of it. The production of cerebral congestions is also favoured by the inflammation of the different organs. The hyperemia, which does not constitute inflammation, but which is one of its elements, may be repeated on the brain, and this is observed, both when this inflammation still continues in all its force, and when it has prematurely disappeared. As an example of the first case, we shall instance erysipelas of the face or of the scalp, which sometimes terminates fatally by the cerebral symptoms which are complicated with it, and for the explanation of which no other lesion is found on examination, than a greater or less hyperemia of the encephalic mass. As an example of the second kind. we shall instance what occasionally happens during measles or scarlatina. In some children the eruption has scarcely shown itself, when it begins to fade, and at the same time the face and eyes become very much injected; the children complain of headach; they become debilitated; all motion is painful to them; they soon become comatose, and die. To account for these serious symptoms, what do we find in the encephalon? Sometimes a sero-purulent infiltration of the meninges, or a perceptible distension of the ventricles by turbid or limpid serum; but most frequently nothing more than simple hyperemia, which, in more than one case, is itself not very well marked.

---

* In this enumeration of the causes of cerebral congestion, our author seems to have taken no notice of the different pathological states of the lungs, which have a tendency to bring about such a result. The following observations of Dr. Bright on the subject, will compensate for the omission:

"The conditions of the lungs most apt to produce (cerebral congestion) are: condensation from the presence of effused fluid; changes in the bronchial membrane from chronic inflammation. Extensive emphysema of the lungs, whether the consequence of original weakness in the structure of those organs, or from violent exertion, or from chronic *thickening of the bronchial tubes*; and sanguineous congestion generally dependent upon some obstruction to the free passage of blood through the *heart*; and occasionally the changes consequent on phthisis and pneumonia. Many of the most distressing symptoms of bronchitis—the intense headach, the wandering delirium, and the lethargic coma, are undoubtedly dependent on the state of the circulation through the head."—(See vol. 1, pp. 127 to 134.)

"It is, however, not quite evident what part the simple mechanical congestion and what part the chemical condition of the blood takes in this morbid train of symptoms: there can be little doubt that both these causes exert a hurtful influence; for if any organ of the body is calcuated to feel more injuriously than another the imperfect quality as well as the disproportionate quantity of the blood with which it is nourished, it is probably the brain."—(Dr. Bright, vol. ii. . 221.)

† *Recueil d'Observations*, Bordeaux, 1830.

It is, again, common enough to see signs of cerebral congestion come on during the febrile disturbance which precedes the eruption of small-pox, measles, or scarlatina; in this fever several children are seized with convulsions, stupor, delirium, and these phenomena vanish as soon as the eruption appears. There are other cases where cerebral congestion recognises for its cause neither intense febrile disturbance nor an inflammation; but where it is connected with other congestions which occur in different organs, and which alternate one with another. Sometimes this tendency of several parts to hyperemia is connected with a general state of plethora; sometimes the latter does not exist, and there is observed a succession of local plethoras, which cannot be explained by the apparent constitution of the individual. We have more than once met persons, in whom dizziness, dyspnœa, palpitations showed themselves by turns. We have seen a woman who presented a succession of hyperemias. She began by complaining, for fifteen days, of a violent headach, accompanied by continual dazzling, vertigo, disagreeable noise in her ears; she staggered in walking, as if she were drunk. These signs of cerebral congestion disappeared, at the same time that there came on an abundant epistaxis, which was renewed for several successive days. Scarcely did this epistaxis cease, when she began to feel pains towards the loins, the lower extremities became numbed, and there soon appeared a menorrhagia, which lasted for thirty hours. The patient, being thirty-seven years of age, had not had her menses for the last three months; it was nearly at the usual period of their return that the menorrhagia took place. After this phenomenon, there was no more appearance of hyperemia towards any organ for a month. At the end of that time the menses did not appear; but without cough, or preceding dyspnœa, some blood was expectorated in a quantity large enough to fill the fourth of an ordinary glass. After this hemoptysis had ceased, signs of cerebral congestion re-appeared, and they continued with variable degrees of intensity for twenty days; at the end of this time a new scene presented itself: the cerebral symptoms disappeared; but the patient voided pure blood by the bowels, and this new flux went on for twelve days: twice or thrice every twenty-four hours she felt a slight colicky pain, which caused her to go to stool, and every time she went she passed from a fourth to half a glass of blood; on some days even the loss of blood was still more considerable. This internal hemorrhage lasted till the time of her menses came, which did not then appear. They did come the following period, but in the form of a hemorrhage so copious as to render bleeding necessary. From this period her health was re-established; menstruation became regular; only some days before they appeared, she complained of headach and some attacks of vertigo; she had flushes of heat in the face, and was troubled with palpitations. We shall now cite a case in which the congestion, primarily seated in the brain, was then removed to the lungs, and became immediately fatal in consequence of the hemorrhage it produced. A man, fifty years of age, entered the Maison Royale de Santé, with all the signs characterising great cerebral congestion: this was not removed by a bleeding. All at once the patient was seized with extreme dyspnœa, which continued to increase, and he died at the end of four hours. On opening the body we found the cerebral mass gorged with blood; no other lesion in the brain. But in the two lungs there were found hard and black masses, which presented all the characters of the lesion known by the name of pulmonary apoplexy. The walls of the heart were hypertrophied*. In the preceding case we sought and found the causes of cerebral congestion in the influence of the forces, whether mechanical or vital, which preside over the circulation. Are these congestions also influenced by the different degrees of activity of sanguefaction: that is, by the greater or less energy of the force which makes the blood? In other words, what is the influence exercised, either by a state of general plethora, or by a contrary state, on the production of cerebral hyperemia? We shall now consider that point.

It is undeniable that, in many individuals, a state of general plethora coincides with the appearance of the symptoms indicating the existence of cerebral congestion; but it is far from being so in all cases. There are even individuals in whom this congestion appears, at the very time that they arrived at a remarkable state of anemia. We have just seen at the La Pitié, a woman labouring under cancer of the uterus, and very much exhausted in consequence of the great hemorrhages she constantly had from the uterus; yet, she has just died from cerebral hemorrhage. We shall conclude this inquiry by some considerations regarding the part which muscular action may have on the production of cerebral congestions. There is no doubt but violent exertion will pre-dispose to it. The attacks of vertigo, to which the action of turning round gives rise, were followed, in the case which we shall now cite, by phenomena usually attributed to cerebral congestion.

In the course of the month of December, a law student was at a public ball, where he waltzed for some time with considerable ardour; he fell down suddenly deprived of sensation and motion. Notwithstanding every attention having been paid to him, bleeding, &c.—he died. We learned that he had enjoyed excellent health, and had just made a very hearty meal. The body was opened thirty-six hours after death. In the cranium the vessels of the membrane were found gorged with blood, and the cerebral substance was as it were covered with sand (*sablée*) throughout all its extent. The lungs were gorged with an enormous quantity of black, viscid blood. The heart, which was large, presented no lesion in other respects; its right cavities were filled with blood, those on the left empty, as also the aorta. In the abdomen there was nothing else remarkable, but a very considerable venous congestion of the intestinal parietes, and considerable sanguineous engorgement of the liver and spleen. It does not appear to us, as has been frequently asserted, that cerebral congestions are more common at an advanced age. We have seen numerous instances of them in young persons; it is wrong to judge of their frequency at the different ages from that of cerebral hemorrhages, which become common only at a considerable advanced period of life; that certainly is not the case with simple hyperemia of the brain. The facts cited prove the thing sufficiently.

---

* This is not the only case where we have seen pulmonary apoplexy without spitting of blood. See our next two volumes on the subject.

The duration of cerebral congestions varies according to each of their forms, and, even in these forms, there are still, in this respect, very great differences. Sometimes the congestion returns incessantly, and that during several months, and even during several years. We have seen individuals who, for almost all their life, were tormented with it. It not seldom is suspended for a shorter or longer period, and then returns under the influence of causes which are appreciable or not. We knew a man, who, during several years, experienced at the close of every winter, the symptoms of an intense cerebral congestion. These symptoms continued for fifteen days, when they disappeared in order to appear again the following year at the same period. Several authors have spoken of intermitting apoplexies, which, in their return, observed the same regularity as the fevers of this name, and presented themselves with the same types. We observed, some years ago, a very remarkable case of this kind, which we shall here record. A woman, sixty-three years of age, habitually enjoyed tolerably good health, when, one morning on getting up, she was suddenly seized with great illness, vomiting, and a violent pain of the head; a quarter of an hour after these symptoms appeared, she uttered a loud scream, and fell, deprived of consciousness. We visited the patient about half an hour after the fall; we find her plunged into a profound coma; eyes shut, pupils large and immoveable, but the eyelids are raised, and when the conjunctiva is touched with the end of the finger, there is scarcely produced a slight contraction of the eyelids, and the patient makes no effort to withdraw herself from this contact. Face injected; commissures of the lips not affected; tongue cannot be seen; the four extremities are in a state of complete relaxation, and the sensibility of the skin covering them appears abolished. The pulse strong and free from frequency; heart beats strongly. This woman appears to us struck with cerebral hemorrhage, considerable enough to engage both hemispheres; we immediately bled her, and had her removed to La Charité. After passing the most unfavourable prognosis on her state, what was our astonishment, when the next morning, at the visiting time, we found her sitting up in the bed, possessing all her intelligence, and enjoying all the freedom of motion. What occurred to her was as follows:—After the bleeding no amendment manifested itself; she continued plunged in coma till towards six o'clock in the evening; when she came to herself, and according to the account of the sister of the ward, she no longer appeared ill. From this we thought that the woman had nothing but a violent cerebral congestion, or which is called *coup de sang*.

The day passed on, and when we saw her the next day, she asked permission to leave the hospital; but before returning home, she was to pass through new sufferings. We had scarcely left her (it was then seven o'clock in the morning) when she was seized with vomiting, as on the day before; then she suddenly lost all sensation and motion, and the same symptoms which were observed on her before entering the hospital now returned. This time they lasted longer; in the evening they still continued; no amendment at night; and when we saw her again, at seven in the morning, she was still in a profound coma. However, she was bled; leeches were applied to her neck. Up to one o'clock in the afternoon no change appeared; then the patient opened her eyes, spoke, recovered her intellects, moved her limbs with ease, and a second time was quite well. She then left the hospital. We visit her at her own house; she is quite well, yet she stammers a little, and there is a slight degree of stupor in her countenance. We do not yet suspect an intermitting apoplexy, and no particular medicinal directions were given. The following morning the same symptoms return. They continue the entire day with frightful intensity, and last thirty-five hours; then, as on the two preceding occasions, the patient comes to herself, and recovers the freedom of her motions; but her intellect is somewhat dull, and she speaks not without difficulty. We then asked ourselves, whether we had not to do with one of those diseases described under the name of *masked intermittent fevers?* Ten or eleven hours still remained till the period when the next attack was to take place. We instantly administered, by the mouth, twenty grains of sulphate of quinine; we administered the same dose of this salt in a starch injection, and we placed under each axilla, in each inguinal region, twelve grains of the same salt, mixed up with some fresh butter. We await with anxiety for the patient, and also with ardent feelings of scientific curiosity for what will happen the following morning. Towards six o'clock no symptom developed itself. Thus the fit is at least retarded, and there is reason to think that, if it return, it will be less intense. Towards noon the patient begins to feel a shivering, which she had not experienced on the preceding occasions; violent headach supervened without vomiting; soon after some convulsive movements agitate the muscles of the face; her intelligence becomes disturbed; movements of the limbs not yet changed; pulse accelerated; these phenomena succeed each other in the space of half an hour; then they are replaced by a state of coma, which lasts for about two hours, and then goes off. The patient then continues for some time as if benumbed; her skin becomes covered with a little moisture, and again she appears cured. Sulphate of quinine was immediately administered in the same dose, and after the same manner, as on the day before. No symptoms occurred after.

This fact furnishes a very remarkable instance of an intermittent cerebral congestion, which assumed a tertian type, and which was completely put a stop to by quinquina. Observe, that the third fit was much more severe than the preceding two. The sulphate of quinine was administered, and the next fit becomes, on the one hand, less severe and of less duration; and, on the other hand, it is remarkably modified in the nature of its symptoms. For the first time, some shivering marks its onset; and for the first time, also, its termination is accompanied with some perspiration. Thus, in becoming less severe, the fit approaches nearer in its symptoms to a fit of ordinary intermittent fever.——We have had an opportunity of observing, at the Maison Royale de Santé, another case of bad intermittent fever, the prevailing symptom of which was profound coma. The individual attacked with it was still a young man, residing in one of the streets adjoining that of the Faubourg Saint-Denis. The quinquina, given only between the second and third fit, prevented not the return of the latter, during which he died. The fever presented the tertian type. On opening the body we discovered no other lesion than a considerable increase in the size of the spleen, and an intense hyperemia, not only of the brain, but of the lung, liver, and digestive tube. The grey substance of the circumvolutions struck us by its brown colour. This colour, which appeared to us the mark of very intense congestion of the circumvolutions, was noted by Dr. Bailly in the numerous autopsies which he made of persons who died at Rome with the symptoms of comatose intermittent fever of a typhoid character[*].——The cases recorded by the physician now mentioned point out in these fevers several of the forms of cerebral congestion already marked out by us. But in none do we find the genuine apoplectic form,

[*] *Traité Antomico-Pathologique des fièvres intermittentes, simples et pernicieuses,* observées à l'Hôpital du Saint Esprit de Rome. Par E. M. Bailly.

such as occurred in the woman whose case we gave a little while ago. We see in M. Bailly's cases that sometimes the coma supervened from the first fit, and went on increasing in intensity in the following fits; and that sometimes, on the contrary, it was only at the end of a certain number of fits that the intermittent fever, till then mild, assumed all at once a typhoid character, with predominance of encephalic symptoms. The following case of M. Bailly's is peculiarly interesting in this respect.

A man, thirty years of age, had been labouring for some time under tertian ague; he came to the hospital the 2nd of July, 1822. The 3rd, he had a slight fit, after which he took two ounces of quinquina. On the 4th, towards noon, he walked about the ward, felt himself very well, and joked with the other patients. Suddenly he was seized with a violent shivering, which was succeeded by a very intense fever, during which he had contraction and flexion of the fore-arm on the arm, and profound coma; he died six hours after the fit. The only lesion found in the encephalon was a very considerable injection of the arachnoid, and a deeper colour than usual of the grey substance of the brain. It must not be supposed that in all the cases of this kind the cure can never take place except on condition of giving the quinquina. Thus Frederic Hoffman reports the remarkable case of a young man, twenty-six years old, who had six days in succession, every morning, all the symptoms characterising an attack of apoplexy. On the seventh day these symptoms did not return, and they did not appear again though nothing was done to stop their return.

Whatever may be the form and progress of cerebral congestion, its termination is far from being always the same. It may prove fatal, either alone, without any other complication, or after having produced in the brain different lesions, and more especially either a hemorrhage or a softening. We shall presently see that it is often the precursor of one or other of those affections.

Cerebral congestion terminates most frequently in a favourable manner; but its return may be dreaded, or, at some future period, a more dangerous disease. It sometimes happens, that certain phenomena, particularly fluxes, coincide with its disappearance, and appear to contribute to it. We have seen a woman, who, for about a month, was tormented with vertigo and other symptoms, which caused us to apprehend an attack of apoplexy; repeated bleedings, a blister applied to the nape of the neck, exercised no remarkable influence on those symptoms. At last she was seized on a sudden with copious diarrhœa; she had, in forty-eight hours, fifteen stools, constituted principally of bile; at the end of this evacuation, which was scarcely accompanied with any colic, the cerebral symptoms disappeared.

We have seen another person, thirty-six years old, who from five to six weeks, had had headach, vertigo, ringing of the ears: at the same time, he experienced in the left side of the face, as well as in the left extremities, an almost continual formication; at intervals his intelligence became dull, he stammered and tottered, when walking, as if intoxicated; at intervals also his mouth became slightly dragged to one side; copious bleeding, various revulsives applied to the skin, as well as to the digestive canal, were resorted to without any benefit. At last an epistaxis came on, during which the patient lost at least two pounds of blood; after this hemorrhage, he no longer felt anything with respect to the head, and every sign of cerebral congestion disappeared.

Lancisi mentions a case similar to the one now cited; it was that of a man seventy years of age, who for a month presented in a very high degree the different symptoms of intense cerebral congestion; at the end of this time he had an epistaxis, in which he lost eleven ounces of blood, and from that time out he was cured. To these facts, we add the following, which we witnessed:—A woman,

---

* Oper. cit. p. 155.

thirty-five years of age, was attacked for some time back with a tic douloureux of the face; the neuralgic pains suddenly ceased, but were succeeded by a violent pain of head, and a giddiness so intense that the patient could no longer stand up; she had at the same time very painful nausea, and vomited twice a considerable quantity of yellow bile. This lasted for two hours; there was then seen to flow through the nasal fossæ, not blood, but such a quantity of serous liquid, that several handkerchiefs were soon moistened by it. This discharge lasted for some hours, and when it ceased the cerebral symptoms disappeared.

It would seem that cerebral congestion should be one of the diseases against which copious blood-letting must certainly succeed. And so it happens in a considerable number of cases: very often have we seen headach, dizziness, tinnitus aurium, numbness of the limbs, &c., disappear all at once after a copious bleeding. But more than once, also, has this remedy been resorted to in vain; the signs of congestion did not disappear; or else, if they diminished or disappeared immediately after the vein was opened, they are soon reproduced, however, with as much intensity as before; in some cases too they are rendered more severe, according as the individual has been weakened by repeated bleedings. Nor have we seen, under such circumstances, that bleeding from the foot possessed any real advantage over bleeding from the arm; besides, we are inclined to think that opening the vein generally produced more effect than the application of leeches to the neck or anus.

There are some rare cases in which not only no relief follows the bleeding, but where it produces in the system such a disturbance, that, under its influence, the simple signs of a cerebral congestion are changed into those of an attack of apoplexy, as may be seen in the following case:—A carpenter, seventy-four years of age, tolerably fat, with short neck, muscles well developed, and presenting the signs of hypertrophy of the left ventricle of the heart, (pulse hard and vibrating, strong impulse of the heart's action, which is heard only over a very small extent of surface,) experienced for some time back constant dizziness, when he entered the La Charité, in the month of February, 1821. His left extremities he felt to be heavy and benumbed; he was bled from the foot. Whilst the blood was flowing, the patient suddenly lost all consciousness; the extremities of the left side became rigid for some seconds; they then fell into a state of complete resolution. At the same time, the left commissure of the lips was drawn down, the mouth became filled with foam, and the respiration stertorous. At the end of an hour consciousness returned. The following morning, the mouth was straight; the intelligence was restored; but the extremities of the left side were completely paralysed. During the twelve following days this paralysis continued; (leeches to the neck, purgative lavements; blister to the nape of the neck;) it was then completely removed, and the patient was soon able to go out, no longer retaining any traces of it.

For a certain number of years back, it is but with very great reserve that purgatives have been employed in the treatment of cerebral congestions; hence it happens that no advantageous result is obtained from them, in consequence of the inertness and want of activity in those which have been employed. We can state positively that we have derived the greatest benefit from this plan of treatment in more than one case of cerebral congestion; but the purgatives which we administered were strong enough to produce from ten to twelve or fifteen evacuations in twenty-four hours. Some persons, with whom blood-letting had been employed unsuccessfully, were thus cured by purgatives. At this very moment there is in the wards of the La Pitié a man, who for several years back has been seized from time to time with violent pain of head, great dizziness, and palpitations. At first we had him bled, still these symptoms continued; we gave him two drops of croton oil, which produced very copious alvine dejections. The following day he neither had headach, nor vertigo, nor palpitations. For several days these symptoms did not appear, they then returned. Two drops of croton oil were again prescribed, and after some copious evacuations which they produced, the signs of cerebral congestion, as well as the palpitations, ceased as rapidly as the first time. Eight days passed on without the patient complaining of any thing; and then the pain of head and dizziness again returned, without being accompanied with palpitations. This time the patient himself entreated us to prescribe the croton oil for him again. We acceded to his request, and it was attended with the same success as on the two former occasions. This individual has not complained since, and he is now leaving the hospital perfectly restored. The three different doses of croton oil do not appear to have distressed either his stomach or intestines. Twenty-four hours after the administration of this medicine, the diarrhœa which it produced ceased spontaneously; the patient asked for something to eat; the abdomen presented not the least trace of irritation.

We should be so much the more inclined to employ a revulsive treatment for the cure of cerebral congestion, inasmuch as we have more than once seen its symptoms disappear only when a flux came to be established spontaneously on different organs. Every one knows that the absence of the menses in women is often accompanied with signs of sanguineous congestion towards the brain, which do not cease till the menses reappear. Several women experience every month, two or three days before their time, which in other respects is sufficiently regular, vertigo, dazzling, flushes of heat in the face, &c., and there is often observed at the same time a difficulty of respiration, which also indicates a congestion in the respiratory tube. The disappearance of hemorrhoids in the two sexes has occasionally given rise to the same symptoms. We have seen, at the La Pitié, a middle-aged man, who for four consecutive years, was attacked every summer (towards the month of July) with severe dizziness, which on every occasion ceased at the same time that an abundant discharge of blood by the rectum took place. This blood was exhaled by the mucous membrane; there was no vestige of hemorrhoids in this case.

To these facts we shall add another, observed by ourselves at the La Charité, in which very serious cerebral symptoms, which lasted for several years, suddenly disappeared, at the same time that other organs became affected. A woman, fifty-six years of age, entered the La Charité in September, 1828. She experienced every day, for the last fourteen years, nervous symptoms resembling those which characterise an attack of epilepsy. The first few days of her entering we ascertained their real nature. She has every day two of these attacks. For several years back she has also had at different times hematemesis, and discharges of blood from the uterus. In other respects she appears in good health; the digestive functions not altered; no lesion of the uterus discoverable. Copious bleeding was employed, which had not the slightest influence on the disease. Ten days after coming to the hospital she was seized with acute pains in the sole of the foot; the entire skin soon became the seat of painful pricking sensations; we soon discovered her to be attacked by the epidemic which then prevailed in Paris. But, what was very extraordinary, the moment this affection developed itself, the epileptic fits, which we saw renewed every day since she entered the hospital, and which had continued in this quotidian form for the last fourteen years, disappeared. The symptoms of the epidemic continued for the twelve days following; and during all this time not the least trace of the cerebral affection. Then a new series of phenomena is presented—namely, hemorrhages, which appear alternately on the mucous membranes; successively, and at different times, blood flows in great abundance from the nasal fossæ, the stomach, bronchi, vagina, and rectum. The different organs, which alternately become the seat of these hemorrhages, no longer manifest any disturbance from the instant the hemorrhage leaves them to go elsewhere. Whilst these different fluxes of blood are taking place, the symptoms of the epidemic are first mitigated and then disappear ; the epileptic attacks are not reproduced ; the hemorrhages cease one after another, and the woman leaves the hospital in perfect health. So rapid a succession of phenomena, affecting so many different organs, is very remarkable; and it is really astonishing to see alarming nervous symptoms disappear so rapidly, the continuance of which for a length of years, seemed to announce that they depended on a deep-seated lesion of the brain or its coverings.

We have now sketched the principal traits of the history of cerebral congestions ; before proceeding, one serious question arrests us, it is this : are the symptoms which characterise the different forms of cerebral congestions, connected in all cases with the afflux of too great a quantity of blood to the brain ? do they depend solely on that cause ? are they not sometimes seen as the effect of a quite opposite state of the nervous centres, or in other words, of their anemia.

It is a law in pathology that, in every organ, the diminution of the quantity of blood which normally it should contain, produces functional disturbances, as well as the presence of an excessive quantity of blood. And what is more, in both cases these functional disturbances are precisely similar. Let impoverished or too thin blood traverse, for instance, the cavities of the heart, palpitations will be the result, just as if too much blood distended it. Dyspnœa comes on equally soon, whether the lung be the seat of a greater or less hyperemia, or whether the air, on entering the pulmonary vesicles, does not find enough of blood there to arterialise. Dyspnœa equally recognises for its causes, anormal paleness of the mucous membrane of the stomach, and a more or less intense sanguineous injection of this membrane ; we might multiply such examples *ad infinitum.* The nervous centres might afford a considerable number of them. Thus we have found, more than once, the brain and its membranes completely bloodless in children who died in the midst of convulsions ; we have also seen the state of coma, in which many of their diseases terminate, coincide with remarkable paleness of the nervous centres. Several times also in adults we have been struck with the complete absence of colour in the brain, perceptible principally in its grey substance, in cases wherein during life cerebral phenomena had taken place, such as delirium, convulsive movements, coma. Do not animals also who are bled to death exhibit symptoms of this description ?

We have often seen individuals who seemed to be completely anemic ; their face was extremely pale, and their entire skin presented a colour like to that of wax ; these persons could not walk without panting very violently ; even when in a state of rest their breathing was short. They were harassed with palpitations ; they digested with pain to themselves ; some even rejected the little food they put into their stomach. At the same time they had headach, giddiness, vertigo, tinnitus aurium ; some even experienced, either at intervals or continually, numbness in the limbs ; others had before their eyes a thick mist ; or else they were tormented with hallucinations of vision or of hearing. These persons had experienced for a long time back copious hemorrhages in different parts, either by the nasal fossæ, or by the rectum, or the uterus, and they habitually presented the phenomena which several persons momentarily exhibit when they are just after being bled. It must be admitted that the brain in such cases is disturbed in its functions, because it is no longer suitably stimulated or nourished by the too poor or too diluted blood which the heart sends to it. In these circumstances it is oftentimes only necessary that a certain time should have elapsed since the cessation of the hemorrhage, when, according as the blood is renewed, the phenomena occasioned by its subtraction are seen to disappear. But they often continue ; digestion in particular remains so laborious, that the system is unable to repair its losses. It is then that we have more than once employed with decided success the preparations of iron, and particularly the subcarbonate. Under the influence of this medicine, we have seen the digestion re-established, palpitations cease, the respiration become free, and at the same time the cerebral symptoms disappear. Thus the same symptoms, according to the diversity of the cause producing them, yield equally, sometimes to blood-letting, sometimes to iron taken into the stomach every day in the dose of from ten to thirty grains and even more.

Without there being any loss of blood, this fluid may be modified in such a way, as to give rise to the disease known by the name of *chlorosis;* in such case, the organs receive their stimulus and nourishment from impoverished blood. Thus, they are disturbed in their functions in the same manner as if a hemorrhage had taken place. In young chlorotic girls, the functions of digestion, circulation, and respiration are modified, just as in persons who have been subjected to great losses of blood; with such persons also, the innervation evinces its suffering by symptoms and phenomena of the same kind, and iron is here also one of the best means to be employed.

If now, we leave the simple observation of facts, in order to endeavour to account for them, we shall soon satisfy ourselves of the insufficiency of the Brunonian dicholomy to explain the symptoms which supervene after cerebral hyperemia or anemia, and which are most frequently similar. These symptoms do not necessarily indicate either the hypersthenic, or the asthenic state. They may be owing to a mere perversion of the cerebral influence, a perversion which is no more connected with an excess, than with a deficiency of life, and which results from this circumstance, that the brain must live another life for this sole reason, that it no longer receives its normal quantity of blood, and not merely because it is then less excited.

But this is not all: when we have referred the symptoms to a hyperemia in one case, and to anemia in another, be we come to the bottom of the subject? By no means; for this hyperemia and this anemia are themselves mere effects, which, a thing very remarkable, the same influence can often produce: thus, by an emotion of the mind, the skin of the face becomes red in one person, and pale in another.

In the nervous centres, as elsewhere, before the production of hyperemia or anemia, we must conceive a primary modification of the force, whatever it is, which subjects the cerebral circulation to certain rules. In the midst of these numerous currents, of these oscillations of globules, which pass within the organic tissues, how many causes constantly presented, and whose influence is entirely unknown to us, may derange a current, and modify the distribution of the globules. Thus, either electricity, or the hygrometric state, &c., must act on them, as so many forces, or, in other words, as so many causes of phenomena.

When we thus examine minutely the grounds of the question, we soon see that hyperemia and anemia, in the brain, as in other parts, are themselves but secondary phenomena—mere effects. But these effects, inconstant and variable, do not necessarily follow the action of the cause; they may be wanting, and yet the symptoms will still continue; for they depend less on the state of cerebral hyperemia or anemia, than on the organic modification which precedes them, and which causes them. Thus, our post mortem examinations show us, for the explanation of identical symptoms, sometimes a state of hyperemia, sometimes a state of anemia, sometimes nothing unusual in the quantity of blood contained in the brain; and in this brain, moreover, no lesion appreciable by our present means of investigation; the reason is, because these means do not show us all; by them we as yet discover nothing but effects; the material modification which incontestably precedes the latter, requires not their production in order that disturbance may take place in the functions of the organ. However, once produced, the different lesions which the present state of anatomy is calculated to reveal, may give rise to phenomena which depend on them alone, and which establish their diagnosis. Thus, the disturbances of motion, sensation, and intelligence, which accompany a hemorrhage or softening of the brain, have no longer the same physiognomy as in the case where they are connected with simple cerebral hyperemia, and as in the case where they are not explained by any of the lesions which our scalpel can reveal to us.

It is obvious of what importance these considerations are for the solution of more than one problem of therapeutics. It is only by admitting, for example, that every case of delirium is not the result of cerebral congestion, that we can conceive the truly marvellous effects produced by opium in certain cases of delirium, called nervous delirium, to which those persons in particular are subject, who take alcoholic liquor to excess. The following case, in point, recently presented itself to us. A man, of middle age, subject to intoxication, entered the La Pitié with erysipelas of the face. When this inflammation was on the point of subsiding, the patient was seized all at once with furious delirium; he was leeched and bled from the arm without any advantage. I determined to try the use of opium. I prescribed forty drops of Rousseau's laudanum in a five ounce mixture, and recommended a spoonful to be given him every hour. This direction was complied with; still no amendment took place, and the next morning the delirium continued in all its intensity. I still am not discouraged, and I add a drachm (*un gros*) of Rousseau's laudanum to the same quantity of liquid. After he had taken it all, the patient fell into a profound and tranquil sleep, and when he awoke, he was in full possession of his reason. The same day he commenced to eat, and left the hospital, two days after, in good health.

SECOND ORDER.

OBSERVATIONS ON HEMORRHAGE OF THE CEREBRAL HEMISPHERES.

THE important and numerous works published from the time of Wepfer up to the present day on cerebral hemorrhage, have thrown great light on most points of the history of this malady; however, in proportion as science progresses, it frequently calls in question many of the accredited opinions, and constantly requires that new facts should submit them to their controul. Such was our end in publishing the cases now about to be read, and the recapitulation which follows them. Among the cases we have collected, we thought it right, more particularly to make known those in which the hemorrhage is limited to certain circumscribed portions of the cerebral hemispheres, contrasting them with those in which the hemorrhage had its seat simultaneously in several parts of these hemispheres. This is the point of view which has determined the order according to which our cases are ranged.

SECTION I.

PARTICULAR CASES.

CASE 1.—*Clots of blood scattered through the substance of the cerebral circumvolutions —Sudden loss of intelligence—General resolution of the extremities—Death in the midst of a state of coma fifty hours after the first appearance.*

A MAN, forty-nine years of age, was brought to the Maison de Santé (September 1830), in the following state: state of coma from which nothing could arouse him ; he resembles a person plunged into a deep sleep ; inspiratory movements succeed each other at long intervals ; the four extremities, when raised, fall as inert masses ; severe pinching has not the effect of making them move, nor is the expression of the countenance modified by it. Lips not dragged ; tongue cannot be seen ; pulse only fifty-seven ; such was his state on the morning at the visiting hour. We were told, that having been subject for some time to some slight transient disturbance in his ideas, this man, who had used alcoholic liquor to excess, had had violent dizziness of the head the day before we saw him ; then towards two o'clock, he suddenly lost the faculty of speaking, seeing, and hearing, and at four o'clock he fell into the state just described. Such was the account we got. A copious bleeding was prescribed, sinapisms to the legs, and diluent drinks. The following morning his state was the same, except that the inspiratory movements, which were so very slow the day before, were accelerated, without the frequency of the pulse being increased. Thirty leeches were applied to the neck, and the head was covered with a bladder full of ice. In the course of the day the respiration became more and more embarrassed, and the patient died at four o'clock in the evening.

Post Mortem.—Considerable injection of the vessels of the meninges. On each side, over the convexity of the hemispheres, the circumvolutions presented a sort of fluctuation in five or six points, each the size of a ten sous piece. We had scarcely removed from one to two lines of the cerebral substance over these fluctuating points, when we found, immediately beneath it, some blood slightly coagulated, contained in a small cavity, capable of containing a large hazel nut. Around this cavity, the parietes of which were of a yellow colour, the cerebral tissue presented a bright red dotted appearance, but without any change of consistence. There were also from seven to eight small clots seated in the circumvolutions of the upper surface of the right hemisphere, and nearly as many on the left. We found no other lesion in the encephalon. Walls of the heart were obviously hypertrophied.

Remarks.—This case presents the very rare example of a case of hemorrhage of the cerebral circumvolutions without complication of any other effusion of blood into the remainder of the encephalon *. The individual who was the subject of it, had nearly the same symptoms as those which are usually produced by a violent hemorrhage taking place in the substance of one of the hemispheres. Dizziness preceded the attack of apoplexy : the latter presented as a predominant phenomenon, the suspension of the senses, and of the faculty of speech ; then there came on a state of coma, in which the patient died, fifty hours only after the appearance of the first symptoms. The respiration was accelerated only towards the termination, and the pulse continued free from frequency up to the last. The absence of hemiplegia is accounted for by the presence of the apoplectic clots (foyers) in both hemispheres. We shall not forget to remark, that around each of these clots, there existed, for the space of some lines, a bright red injection of the cerebral pulp. The nature of the effused blood attested the recent date of the hemorrhage.

Thus simple compression of the most superficial part of some cerebral circumvolutions is sufficient to abolish intelligence, to suspend the exercise of the senses and of speech, and to produce a coma which proved rapidly fatal. We find the immoderate use of alcoholic liquors a predisposing cause of cerebral hemorrhage. The commencing alteration of the intellectual faculties, observed before the attack, is not accounted for by the state of the brain. The coincidence of hypertrophy of the heart and of cerebral hemorrhage should not be forgotten.

---

* In the second volume of our *Pathological Anatomy*, another case of simple hemorrhage of the circumvolutions is cited, found in an individual who died suddenly after strong cerebral excitement. The reader is requested to compare the two cases.

Case 2.—*Cerebral circumvolutions transformed into a sort of erectile tissue—Small sanguineous effusions into this tissue—Varicose dilatation of the veins of the pia mater—Perforation of one of them—Attack of apoplexy: death at the end of twenty-four hours—Gangrene of the lung.*

A woman, fifty years of age, entered the La Charité, during the month of October, 1820, in a state of emaciation, the organic cause of which could with difficulty be appreciated. No cough; no dyspnœa; dull sound under the left clavicle on percussion; respiratory murmur more obscure there than in any other part; no sweat; pulse habitually a little frequent; tongue pale and moist; appetite gone. For three weeks we saw this woman waste away more and more every day; at the end of this time she was suddenly seized with attacks of vertigo, which were succeeded by loss of consciousness after two hours. At the morning visit her intellectual and sensorial faculties appeared entirely suspended; the limbs, when raised, fell by their own weight; those of the left side insensible to pinching; the right not so much so; respiration stertorous; pulse hard, but free from frequency. Death the same day towards evening.

Post mortem—Cranium.—Veins ramifying over the net-work of the pia mater covering the cerebral circumvolutions were very much dilated at intervals; these were genuine varices. Their parietes, soft and friable, were torn and reduced to a kind of pulp by the least force. A layer of coagulated blood, at least six lines in thickness, covered the entire upper surface of the right hemisphere. After subjecting these parts to a stream of water, it was ascertained that one of the large varicose veins, which traversed the pia mater on the right, was perforated; it presented a large orifice with irregular-jagged edges, which was in some measure stopped by a small clot of blood. On the posterior lobe of the same right hemisphere, there were remarked four circumvolutions, which, at their surface, were changed into a bright red, areolated, fungous-like tissue, in the midst of which appeared three or four small cavities, each of which might admit a pea, and were filled with blood. In these parts the cerebral pulp presented not the least softening.

Thorax.—The summit of the right lung presented a portion, the size of an egg, black as ink, and changed into a liquid putrid substance, which exhaled an infectious odour. No communication as yet seemed to be established between this part, which was evidently gangrenous, and the bronchi.

Remarks.—This is another instance of lesion of the encephalon limited to the circumvolutions; but their change differs in several respects from that presented in the first case. This alteration partly existed for a very long time before any cerebral symptom developed itself. The dilatation of the veins of the pia mater, and the softening of their walls, were certainly the effects of chronic disease. That remarkable development of the substance resembling erectile tissue, on the surface of some circumvolutions, was also a chronic affection. The production of this tissue depended, in all probability, on the dilatation of the capillary veins of the cerebral pulp, which were thus affected with the same kind of lesion as the external veins in which they terminate. But what is very extraordinary, all this morbid process went on without any appreciable disturbance of the cerebral functions resulting from it. Then a period arrived, when there was a simultaneous laceration of one of the large external veins, and several of the small veins, the dilatation of which gave to some cerebral circumvolutions the appearance of erectile tissue. Thence resulted a double effusion of blood, the one being in the pia mater, the other in the pulp of the circumvolutions; and then only was it that the cerebral symptoms appeared. Violent vertigo was succeeded by a complete abolition of the senses and of intelligence; then coma supervened, in which the patient died. The loss of motion on one side of the body, and its preservation in the other, showed that only one hemisphere was the seat of lesion, which is contrary to what occurred in the first case. We may remark here that there was no symptom from which we could have suspected the gangrene of the lung observed in this case.

Case 3.—*Effusion of blood into the anterior lobe of the left hemisphere of the brain—Hemiplegia on the right side—Remarkable embarrassment of speech—Death on the ninth day.*

A labourer, fifty-seven years of age, entered the La Charité in the following state :—Intelligence very dull ; extreme difficulty in pronouncing his words ; he commences several phrases without being able to finish any ; after articulating with great difficulty some few words, there is nothing afterwards heard but an unmeaning stammering ; when he is spoken to for any time, he laughs and cries alternately. He can give no account of what happened to him. Face red ; eyes injected ; left commissure of lips drawn up ; this side of the face alone is moveable ; still he complains equally whether the left or the right side of the face be pinched ; cannot by any effort put out his tongue ; the two extremities of the left side are moved with ease, whilst those of the right side are deprived of all voluntary motion ; the cutaneous sensibility does not appear to be diminished there. We find that four days previously this person fell down in the street deprived of consciousness, about eleven o'clock in the morning ; that when brought home he did not recover it till the following day, and that since he has continued in the state described. During the four days following the tongue became dry and black, urine passed involuntarily, pulse frequent, extremities cold, respiration embarrassed, and he died nine days after the attack of apoplexy.

Post mortem. Cranium.—The portion of cerebral substance which terminates anteriorly the left hemisphere, is marked by a cavity which might contain a pullet's egg, and which is filled by a large clot of blood. This cavity commences an inch below the upper surface of the hemisphere, and half an inch from its anterior extremity ; posteriorly and inferiorly it is bounded by the portion of cerebral substance which forms the point of junction of the superior and anterior walls of the left lateral ventricle. Both this latter and the corpus striatum are perfectly intact. The parietes of the accidental cavity present on their internal surface a bright yellow colour, which is continued two or three lines in depth. The cerebral substance no where softened. No other appreciable lesion in the brain.

Thorax.—Lungs infarcted, and hepatised also in several parts ; heart large ; hypertrophy of the left ventricle.

Abdomen.—Red softening of the gastric mucous membrane in its left half; slate-coloured tint of the pyloric portion. Numerous arborisations in the small intestine. Spleen large and very soft.

Remarks.—This case has been cited as an instance of hemorrhage exactly limited to one of the anterior lobules of the hemispheres. According to the theory which attributes the direction of the movements of the lower extremities to the anterior part of the cerebral hemispheres, we should only have found here paralysis confined to the lower extremity of the right side, and yet the upper extremity of the right side was equally deprived of motion. The paralysis extended also to the right side of the face, and the motions of the tongue could no longer be performed. The articulation of the words was become very difficult, a circumstance which is found in accordance with the opinion put forth by Dr. Bouillaud with respect to the encephalic seat of speech. We content ourselves with noting here these different facts, proposing to ourselves, in our recapitulation, to add them to others for the purpose of resolving the important questions to which we have just referred. At the same time that the power of motion was abolished in one side of the body, sensibility was preserved intact on that side. With respect to intelligence, it was singularly dull ; memory seemed gone altogether. The commencement had been marked by a sudden loss of consciousness, and here again there was a coincidence between a cerebral hemorrhage and a hypertrophy of the heart. It was not in consequence of this hemorrhage that the patient died. The perfectly sound state of the brain around the apoplectic clot was a good condition for the absorption of the effused blood. Death was the result of a double inflammation of the lungs and stomach, which particularly evinced itself by the adynamic state into which the patient so suddenly fell. Such a mode of death is extremely rare in apoplectic subjects.

CASE 4.—*Effusion of blood into the posterior lobe of the left hemisphere—Sudden loss of speech and motion on all the right side—Death the sixth day.*

A house painter, fifty-five years old, who appeared to be of a strong constitution, was brought to the La Charité, the 7th August, 1820, in a state of complete hemiplegia of the right side. He had had lead colic several times, and still felt acute abdominal pains, when on the 5th of August he was suddenly deprived of speech, and of motion on the right side. On the 7th he presented to us the following state :—Lies on his back ; the eye-lids of the right side, which were glued together, open less wide than those of the opposite side ; the two eyes seem to be equally sensible to the impression of light ; the left buccal commissure is drawn upwards and outwards ; the tongue on being protruded deviates to the right ; the upper and lower extremities of the right side are deprived of all motion ; they may be flexed or extended without any resistance being opposed to them. (Bled to sixteen ounces, two blisters to legs, purgative lavement.) The blood drawn from the vein was buffed. He was bled again on the next day, &c., and on the day after he was in a constant stupor ; respiration loud ; involuntary discharge of urine ; obstinate constipation. He remained in this state till the 24th, when the sensibility of the paralysed limbs became very much diminished : purgative lavements, &c., were prescribed. On the 24th, for the first time, diarrhœa came on ; tongue dry. From 24th to 30th, constant purging ; patient is becoming debilitated ; intelligence intact ; he makes an effort to answer when interrogated, but cannot articulate a word. The abolition of speech continued from the time of his entering the hospital. The 31st of August, extreme prostration ; groaning ; retroversion of the head ; left commissure of the lips drawn very much upwards ; tongue always dry, and inclined to the right ; upper eye-lid of the right side always more depressed than the left ; pulse small and weak ; extremities cold ; respiration more and more difficult and stertorous ; death.

Post mortem twenty hours after death.

Cranium.—Vessels of the pia mater very much gorged with blood. No serum in the external arachnoid, nor in the ventricles. In the substance of the posterior lobe of the left hemisphere, behind and outside the optic thalamus, which continued intact, and nearly on the same level with it, we observed a cavity large enough to contain a small apple, which was filled with blood of the colour of iron rust, partly liquid, and partly coagulated. A very fine cellular membrane lined the parietes of this cavity. The cerebral substance around it was of a dirty rose tint, and was a little softened for the extent of some lines.

Thorax.—Lungs infarcted, sound in other respects ; heart large ; hypertrophy of the parietes of the left ventricle.

Abdomen.—Some red dots on the inner surface of the stomach, towards the great cul de sac. In several places bright red injection of the mucous membrane of the small intestine, and of that of the large intestine, the redness of which is found to increase as we approach the rectum.

Remarks.—This case differs particularly from the preceding with respect to the seat of the effusion. Here it existed in the posterior part of one of the hemispheres, in that part which, according to some authors, regulates the motions of the upper extremities ; in this case, however, the lower extremity was paralysed as well as the upper. The loss of speech continued from the commencement to the end of the disease; this was even the first symptom, and yet no lesion was found in the anterior part of the hemispheres. If then the third case, which also exhibited loss of speech, seems to confirm the opinion which places this faculty in the anterior lobes of the hemispheres, the present case completely upsets this opinion. We shall remark, besides, that at the commencement the intelligence was not disturbed, and that it was not till a considerable time after the attack that stupor supervened. Here again an intestinal inflammation complicated the cerebral affection, and hastened the patient's death, which did not take place till the 26th day; we also found on the walls of the hemorrhagic cavity a pseudo-membrane, which was already organised into cellular tissue. There was further, in this case, around the cavity, a little rose-coloured softening, the existence of which was not indicated by any particular symptom.

Case 5.—*Effusion of blood into the posterior lobe of the left hemisphere—Paralysis of the upper extremity of the right side; preservation of sensation and motion in the corresponding lower extremity—Death on the 20th day.*

A carpenter, twenty-nine years old, entered the La Charité, 29th June, 1829. We ascertained that, nineteen days previously, he had all at once lost consciousness; that at the end of twenty hours he commenced to recover the use of his intellects. The following days he remained paralysed in the right arm. He was bled twice. The day before entering the hospital, he relapsed into coma.

On the 29th, we found him in a profound stupor; not a word could be elicited from him; eyes shut; cheeks a violet tint colour. The right upper extremity extended along the trunk, when raised, fell again as an inert mass. The skin of this extremity was insensible to pinching. On the contrary, when we pressed the nails into the skin of the left upper extremity, this limb was quickly drawn back, the muscles of the face became contracted, and the patient moaned. We then pinched gently the lower extremities, which were immoveable and extended, and the patient did not seem to feel it. On pinching them more severely, the two lower extremities quickly performed some rapid movements; we saw them, on the right as well as on the left, carried alternately in different directions; at the same time he uttered some groans. It thus became evident that sensation and motion were lost only in the right upper extremity, and that both these faculties were particularly retained in the corresponding lower extremity. Pulse hard and frequent; respiration hurried. The patient died on the 30th June.

Post mortem. Cranium.—Some lines below the circumvolutions belonging to the posterior lobe of the left hemisphere, two inches anterior to the point where this lobe touches the occipital, it was marked by a cavity capable of containing an ordinary sized nut, and was filled with a blackish brown clot of blood. At the bottom of one of the anfractuosities situated above the effusion, was observed a cleft, through which the anfractuosity communicated with the apoplectic cavity; some liquid blood traversed this cleft, and had raised the pia mater which lined the anfractuosity. The parietes of the cavity, containing the clot of blood, were of a bright red, and around it, for the extent of two or three lines only, the cerebral pulp had lost its usual consistence. The large arteries at the base of the brain presented numerous cartilaginous or bony patches.

Thorax.—Lungs infarcted; heart very large; hypertrophy of the parietes of the two ventricles, with dilatation of the cavity of the left ventricle. Some ossifications at the aortic valves, as well as in the aorta itself.

Remarks.—Here again is a case where the sanguineous effusion was exactly limited to the posterior part of one of the hemispheres: it is but inconsiderable, and nearly touches the circumvolutions: it presents this remarkable circumstance of a communication between the apoplectic cavity and the exterior, by means of the rent at the bottom of an anfractuosity. Here the upper extremity opposite to the side of the hemorrhage was the only one affected; the corresponding lower extremity remained intact; so that this particular case is confirmative of the opinion which places the seat of the motions of the upper extremities in the posterior part of the hemispheres; but we must not forget that the fourth case gave us quite an opposite result. The patient was perceptibly getting better, when, three days before his death, he relapsed into that state of coma which had existed at the outset of his affection. Did this relapse coincide with the time when the blood strove to make its way so as to cover the external surface of the brain, by escaping through the rent made in a point of the walls of the apoplectic cavity? The death did not take place till the 20th day; there was, as yet, no appearance of the formation of a false membrane on the walls of the cavity containing the blood. We have seen that it was already very well formed in the patient who forms the subject of the 4th case, who died on the 26th day.

In this patient, again, there was aneurism of the heart.

Case 6.—The subject of this case was a woman, fifty-five years of age, who appeared to have been originally of a strong constitution. From the period at which she ceased to menstruate, namely, at the age of forty-seven, she became very fat, and was troubled with constant giddiness of the head. Four years after she had a slight apoplectic attack, which went off after a few days. After four years more she had another attack, with entire loss of consciousness, for which she was blistered, &c. After about a week, she was removed to the La Charité; when she presented the following state:—Countenance flushed; paralysis of the upper eye-lid of the right side, with deviation of the globe of the eye outwards; unable to protrude the tongue; hearing obtuse; loss of voice and of speech; the patient, who seems quite dull, hears, however, what is said to her, but cannot answer, except by making signs with her head. Motion in the two extremities of the right side destroyed; fæces and urine passed involuntarily; pulse hard, and free from frequency; leeches were several times applied across the jugular veins, and purgative lavements administered. On the 19th, she appeared to be getting better in every respect, except as to speech; but, on the 25th, she relapsed into coma, respiration became more and more difficult, and she died on the 27th.

Post mortem. Cranium.—In the substance of the middle lobe of the left hemisphere, external to, and a little above the point of junction of the optic thalamus and corpus striatum, was found a collection of blood (about six ounces), of which one part was liquid, and the other coagulated. A fibrinous layer, not organised, covered the inner surface of the walls of the cavity containing this blood. For the space of two or three lines around it, the cerebral pulp was a little softened.

Thorax.—Lungs generally infarcted, hepatised in several points. Heart large; remarkable hypertrophy of the walls of the left ventricle.

Abdomen.—Mucous membrane of the stomach presented a greyish tint. Liver very large, greasing the scalpel.

Remarks.—The seat of the hemorrhage is here in the very centre of one of the hemispheres, and there is hemiplegia. Theory might have anticipated this; but the circumvolutions were not at all engaged, and yet the intelligence was not intact. No alteration in the anterior lobe, and yet there was complete loss of speech. Here then we have in succession three facts (cases 4, 5, and 6), in which the lesion resides once in the anterior lobe, another time in the posterior lobe, and once in the middle lobe, and in these three cases there was equally loss of speech. In this case the dizziness for a long time preceded the apoplectic attack of which she died. We did not find in the brain any trace of that which she had had four years before. Perhaps she was then attacked merely with simple cerebral congestion, sufficiently severe to produce the symptoms of hemorrhage, of which we have already seen instances. Neither will the state of the brain account for the return of the coma two days before death.

Case 7.—*Effusion of blood into the middle part of the right hemisphere. Some softening of the cerebral substance around this effusion. Death on the seventh month.*

A periwig maker, seventy-one years of age, of a good constitution, fell suddenly, deprived of consciousness, on the 15th of May, 1820. This loss of consciousness lasted but for some hours. When he came to himself, he found that he was paralysed in all the left side of the body. He entered the La Charité June 28, and presented the following state :—Pain towards the summit of the head, particularly on the right side ; sight and hearing weaker on the left than on the right ; left buccal commissure immoveable ; the right drawn out ; tongue inclined to the left side ; complete loss of motion in the upper and lower extremities of the left side ; sensibility of these same members very much impaired, but not quite extinct ; obstinate constipation ; pulse full, a little frequent ; intellect perfect. On the 4th of July it was observed that the left side of the thoracic parietes was covered with an enormous anthrax. A crucial incision was made into it to a considerable depth ; whitish eschars were detached from it by degrees ; towards the end of August it was scarcely cicatrised. During the month of September another anthrax, still larger than the former, appeared in the supra-spinous fossa of the left scapula. Other smaller ones appeared in succession in the vicinity of this latter one, always on the left. At this time the paralysed limb became atrophied, and permanently contracted, the fore-arm on the arm, and the leg on the thigh. He complained when we attempted to move his limbs. He passed his urine and fæces involuntarily. Towards the month of October he became very feeble ; scarcely ever spoke ; large eschars formed on the sacrum ; the contraction of the left upper extremity ceased, whilst its immobility remained. He died the 21st of November without his respiration having become stertorous.

Post mortem. Complete marasmus, extremities rigid, broad ulcers on sacrum and trochanters.

Cranium.—Its walls very brittle ; dura mater strongly adherent to the vault of the cranium ; arachnoid of the convexity a little opaque ; right hemisphere of brain presented a cavity capable of containing a middle-sized apple. This cavity at an equal distance from the two extremities of the hemispheres, near the circumvolutions of the upper surface, external, superior, and posterior to the corpus striatum. Its parietes were lined by a cellular membrane, dense, very resisting, in the tissue of which numerous vessels were ramified. By its inner surface, this membrane adhered closely to the cerebral substance which is removed along with it. The cavity is filled with a softish substance having the colour of iron rust. The surrounding cerebral substance is softened to the extent of four or five lines. The softened portion has a slightly yellow tinge. Some little serum in the ventricles and at the base.

Remarks.—We have met a symptom here which did not present itself in any of the preceding cases, namely, the flexion with which the paralysed limbs were affected at a certain period of the disease. The lesions found in the brain do not sufficiently account for it ; for the softening in this case was not greater than in the preceding. The atrophy of the paralysed limbs may be referred to the long duration of the paralysis. We see here, as in the other cases, paralysis of the face, that of the organs of the senses, existing on the same side as paralysis of the limbs, and the tongue deviating, when protruded, towards the paralysed side. Still amidst these disturbances of sensation and motion, the intelligence remained intact ; the speech was not affected. The lesion, however, was similar in its seat and nature to those in the above-mentioned cases, where the intelligence was disturbed and the speech entirely lost. What difficulties! Affecting not to see them, certainly is not resolving them. This is the first time we met so perfectly organised a membrane around the effused blood, which may be referred to the long duration of the disease.

CASE 8.—*Cavity filled with a serous liquid in the middle part of the right hemisphere.—Two years before death, symptoms of cerebral hemorrhage.—Hypertrophy of the heart—Pulmonary apoplexy.*

A man, sixty-one years of age, experienced, from his youth, some oppression whenever he exerted himself; the effort to ascend a staircase brought on insupportable beating of the heart. He had met, at different times of his life, distressing annoyances which made a great impression on him, and visibly aggravated his state. In the month of February, 1820, he felt for the first time very intense headachs, and dizziness so severe that it obliged him to discontinue his business. Four days after experiencing these symptoms, he suddenly fell deprived of consciousness. He was immediately bled from the foot, and in about a quarter of an hour his intellectual and sensorial faculties returned; but the left upper extremity was weaker than the right; the patient felt it heavy. He sustained himself equally well on his two legs. This partial paralysis lasted from fifteen days to three weeks, then disappeared entirely. But from that period he retained the headachs and frequent dizziness, which often compelled him to sit down lest he should fall. Dating from the month of September, 1821, the dyspnœa, as also the palpitations, became more and more violent, and the dizziness became more frequent. The patient was now unable to attend to his ordinary business. He was bled repeatedly, both locally and generally. He wasted away very much, still retaining some appetite. On the 21st of January, 1822, after his dinner, syncope came on him which lasted for some minutes. During the night he laboured under extreme difficulty of breathing, and had very distressing kinks of cough. On the following day his legs appeared infiltrated for the first time. He entered the La Charité on the 26th of January; and at the visit on the 27th he presented the following state:—Orthopnœa; face puffed; lips had a violet appearance; œdema of the legs and hands; cough frequent and dry; beating of the heart very violent, the impulse being very strong in the præcordial region, and extended over a considerable surface; pulse frequent, small and irregular; tongue natural; reluctance to take food, for fear of augmenting the oppression. Up to the 31st all the symptoms became aggravated, and on the 31st he expectorated about three ounces of blood mixed with aërated mucus. On the 1st of February prostration became very great; respiration blended with a râle; cough dry; fæces passed involuntarily; pulse extremely weak. Died on the morning of the 2nd.

Post mortem eight hours after death. Cranium.—Dura mater adhering superiorly to the parietes of the cranium; sub-arachnoid cellular tissue infiltrated with a gelatinous and transparent liquid. On cutting from above downwards, and layer by layer, the substance of the cerebral hemispheres, we find in the right hemisphere a cavity with its parietes nearly contiguous, containing some drops of serum, situate in the centre of the middle lobe, a little above and outside the lateral ventricle. This cavity extended two inches from before backwards, and one inch vertically. Around it, for the space of two or three lines, the cerebral substance, of natural consistence, is of a yellowish tint. Its parietes were lined by a smooth, consistent membrane, about a quarter of a line thick, similar to a serous membrane.

Thorax.—Heart very large; considerable hypertrophy of the walls of the left ventricle; dilatation of its cavity; cartilaginous points on the valves surrounding the orifice of the aortic ventricle; right cavities distended with large clots of blood, deprived of colouring matter. In the centre of the lower lobe of the right lung, we find a portion of the pulmonary tissue of the size of an orange, black, hard, not floating in water, and from which there is expressed a deep brown liquid. The same lobe contains several other similar masses, but smaller. Some were also found at the base of the left lung. These two lungs are, moreover, very much infarcted in every part.

Abdomen.—The gastric mucous membrane presented a slate-coloured tint; considerable venous injection in the parietes of the small intestine; red tint on the free edge of its valves; a brown red mucus on its interior; liver gorged with blood.

Remarks.—The apoplectic symptoms experienced by this person, two years before his death, might have depended on simple cerebral congestion carried to a high degree. There was, however, then, in the substance of the brain, a hemorrhage, not considerable no doubt, the existence of which was proved by the cavity found in the right hemisphere; the loss of consciousness was of but short duration, and the partial paralysis which succeeded it, also soon disappeared. Remark here the intensity of the dizziness preceding and following the hemorrhage. In this case, again, there was a coincidence between the latter, and the existence of an old affection of the heart; and does it not appear that it is to this affection we must attribute, at least as a predisposing cause, the double hemorrhage which attacked alternately the brain and lung?

CASE 9.—*Effusion of blood into the corpus striatum of the right side—Sudden loss of consciousness—Hemiplegia on the left—Death the fifteenth day.*

A woman, forty-eight years old, addicted to wine, fell, suddenly deprived of consciousness, the 16th of March, 1823. A little time after she was bled; at the end of two hours she came to herself. She entered the La Charité the same evening. On the next morning, we found the two extremities of the left side completely deprived of motion and sensation. The right commissure of the lips was drawn upwards; intellects perfect; pulse hard, vibrating, a little frequent (she had blisters to the legs, and purgatives). On the following day, a visible amendment; sensibility restored in the paralysed side; the left lower extremity begins to perform some movements; the left upper extremity as much paralysed as on the preceding day. The 19th, she moves the leg and thigh of the left side with ease; pulse not frequent (a blister between the shoulders). From this period to 1st April, symptoms of gastro-intestinal irritation manifested themselves; tongue red and dry; great thirst; tension of the abdomen; diarrhœa; delirium soon came on; the patient died in what is called the adynamic state. The paralysis of the lower extremity of the left side had been completely removed, not so of the upper.

Post mortem. Cranium.—The only lesion presented by the encephalon was in the right corpus striatum. Towards the middle part of this substance, some lines beneath its upper surface, was found a small cavity filled with clots of blood. Around them the cerebral pulp was very soft for the space of three or four lines.

Thorax.—Hypertrophy of the walls of the left ventricle of the heart, with contraction of its cavity.

Abdomen.—Gastric mucous membrane very soft and red through the entire splenic portion. Intense redness, and, as it were, granular appearance of the inner surface of the ilium through a great portion of its extent.

Remarks.—It is rare to find hemorrhage so exactly limited to the corpus striatum as in the above case. The commencement of the affection was similar to that of the generality of cerebral hemorrhages, whatever be their seat. The sanguineous effusion being inconsiderable, the patient soon recovers the use of her senses, and her intelligence continued quite perfect, which, in this case, may be referred to the seat of the hemorrhage having taken place far from the substance of the circumvolutions. At first, the two extremities of the side opposite to that of the sanguineous effusion were equally paralysed, which already invalidates the opinion according to which isolated lesions of the corpus striatum should modify motion only in the inferior extremity. But this is not all: one of the paralysed limbs soon recovers the power of moving, and that is the lower extremity—that is to say, that limb which, according to the opinion just now mentioned, should alone have continued deprived of motion. Thus, the more we advance, the more will these facts come to destroy, or at least to stagger assertions too hastily made. There was no appearance in this case of any curative process having been set up around the hemorrhagic cavity. The most alarming cerebral symptoms had, however, ceased, and it was under a complication of gastro-intestinal inflammation that she sank. She, too, had hypertrophy of the heart.

CASE 10.—*Traces of an old effusion of blood into the right corpus striatum—Hemiplegia, preceded by loss of consciousness—Death thirteen months after the attack of apoplexy.*

A hair-dresser, forty-six years of age, entered the La Charité the 27th of January, 1822. He told us that, on the 21st of February, 1821, he had had an attack of apoplexy, during which, he told us, he had entirely lost all consciousness. On coming to himself, he was paralysed in the two extremities of the left side. By degrees this paralysis diminished, and when we saw him, he merely felt some debility in the left extremities. The arm of this side appeared to him not so strong as the other, and in walking he dragged the leg a little. He also presented all the signs of pulmonary phthisis, of which he died the 11th of April, 1822.

Post mortem. In the posterior part of the right corpus striatum, nearer its external than its internal part, about an inch and half below its upper surface, a cavity was found an inch in length, and an inch and a half in breadth. It was filled with a substance, similar in colour and consistence to a concentrated decoction of chocolate. No false membrane extended over the parietes of this cavity. Around it, for the extent of about half an inch, the substance of the corpus striatum was transformed into a yellowish pulp. Caverns and tubercles in the lungs; heart normal; ulcerations in the intestines.

Remarks.—Here again the lesion was confined to the corpus striatum, and still there is hemiplegia. Observe, however, that it was in the posterior part of the corpus striatum that the hemorrhage took place. The paralysis, though considerably diminished, existed, however, in a slight degree at the time of death. We saw what was the state of the corpus striatum, after the lapse of more than a year since the hemorrhage. There was yet no organised membrane on the parietes of the cavity, and around it the cerebral substance had neither the natural consistence nor colour. Look again, on the contrary, to the 8th case, in which the apoplectic cavity and neighbouring parts, presented quite a different appearance, and also all the symptoms of cerebral hemorrhage had disappeared long before death.

CASE 11.—This was the case of a man sixty years of age, who was admitted towards the commencement of November, into the Maison de Santé, with a disease of the heart of long standing. The two extremities of the left side were also paralysed; intelligence perfect. About three weeks before his admission, he told us he felt his left leg fail under him, and he fell, not however deprived of consciousness. A little after he found the upper extremity of the left side also deprived of motion; the sensibility of the paralysed limbs remained. His dyspnœa increased, as also his dropsy, and he died on the 25th of November, the hemiplegia continuing to the last moment.

Post mortem. In the centre of the right optic thalamus, there was found a cavity filled with black blood, of some consistence. The cavity was capable of containing a large cherry.

Thorax.—Lungs infarcted; hypertrophy of the parietes of the heart, and dilatation of its cavities, which were filled with blood; cartilaginous incrustation at the base of the mitral valve; serous effusion into left pleura; close adhesions between heart and pericardium. Two bony concretions developed between this membrane and the proper substance of the heart.

Abdomen.—Considerable injection of the intestinal mucous membrane in different parts; spleen very large, dense, and black; liver gorged with blood.

Remarks.—This case differs from all the preceding, in this, that no loss of consciousness occurred when the hemorrhage came on. The two extremities of the left side were equally affected with paralysis, though the lesion existed but in one optic thalamus.

CASE 12.—*Serous cyst in the left cerebral peduncle—Hemiplegia on the right side, of long standing, with diminution of the sensibility—Death four years after the appearance of this hemiplegia.*

A woman, about sixty years of age, entered the hospital La Pitié in the month of March, 1831, with the symptoms of a chronic peritonitis. She has been hemiplegic for the last four years on the right side; the sensibility also on this side is impaired. She told us, that one morning on awaking, she found herself thus paralysed, though she had gone to bed on the preceding night in perfect health. She states that neither since nor before this accident, had she either headachs, nor dizziness. She died fifteen days after her admission, without presenting any additional symptom connected with the brain.

Post mortem. In the middle of the cerebral peduncle of the left side, we found a cavity capable of containing a cherry, filled with a greenish serum; it was lined with a dense resisting membrane, the tissue of which seemed to be fibro-serous. Around it, to the extent of some lines, the nervous substance was of a pearl white, and of cartilaginous hardness. Sero-purulent effusion into the right pleura, and also into the cavity of the peritoneum. Adhesions of the intestines by cellular bands which were still soft.

Remarks.—We think that this woman was attacked four years before her death with hemorrhage, seated in the left cerebral peduncle. The lesion found in this peduncle seems to us to be formed according as the absorption of the effused blood goes on. After the latter disappeared, the paralysis still remained, which is explained by the nature of the lesion found in the peduncle; this is the first time we met an induration of the nervous tissue around an old hemorrhagic cavity. But observe, that this examination was made four years after the appearance of the first cerebral symptoms. These symptoms were not very many, but well marked.

CASE 13.—*Effusion of blood into a great part of the substance of the right hemisphere —Destruction of the corpus striatum, and of the optic thalamus—Escape of blood into the right lateral ventricle—Death two hours after the appearance of the first symptoms.*

A man, thirty-seven years old, fell suddenly, deprived of consciousness, in one of the streets near the La Charité, to which he was instantly conveyed. When examined, he was found to be in a state of profound coma. The four extremities completely relaxed, and evince no sign of sensibility; they are quite cold; tracheal râle already; pulse frequent (sinapisms to the lower extremities). An hour and a half after entering the hospital he died.

Post mortem. On removing a few slices of the nervous substance from the right hemisphere, we came to an enormous effusion of blood, occupying a great portion of this hemisphere. Instead of the nervous pulp, we find only half solid half liquid blood, in which there are suspended some fragments of brain. The optic thalamus and corpus striatum no longer exist, and the right lateral ventricle is filled with a large clot of blood.

Remarks.—This case presents one of the most rapidly fatal cases of cerebral hemorrhage we have met on record. The severity of the symptoms is here connected with the extent of the lesion ; a great portion of the right hemisphere consisted of a vast cavity full of blood ; the corresponding ventricle was also filled with it.

Case 14.—*Effusion of blood into the middle of the right hemisphere—Other smaller effusions into the anterior and exterior parts of the same hemisphere—Sudden loss of consciousness—Hemiplegia on the left side—Death the fourth day.*

A baker, twenty-eight years of age, entered the Maison de Santé, October 20, 1830. He had worked hard for some time, and used to drink six or seven cups of café à l'eau every night. He enjoyed, however, good health. On the morning of the 19th October, he fell down suddenly, deprived of consciousness. He was bled. Afterwards he was conveyed to the Maison de Santé, where he presented the following state :—Complete loss of consciousness ; insensibility and loss of motion in all the left half of the body ; strong pressure, made with the end of the finger, on the left transparent cornea, on the ocular and palpebral conjunctiva of this side, produces not the slightest movement either of the lids or the globe of the eye ; sight quite gone ; pulse small, 100 ; respiration regular and calm (28 per minute). (A solution of sulphate of soda ; sinapisms to the feet, &c.) During the night ; sudden and rapid movements of the side not paralysed ; pulse small, 120 ; skin covered with sweat. On the 21st, some difficulty in swallowing ; face more injected than on the preceding day. (Thirty leeches to the right side of the neck, sinapisms to the lower extremities, sulphate of soda in barley water.) All the symptoms continued to become worse, and he died on the morning of the 2 th.

Post mortem, forty-eight hours after death. Well marked sanguineous effusion of the sub-arachnoid cellular tissue of the convexity of the right hemisphere ; rose-tint of the subjacent grey substance ; large clot of blood in the centre of the right hemisphere, on a level with the centrum ovale of Vieussens, external to the corpus striatum and optic thalamus, which are intact. An orange might be contained in the cavity occupied by this clot. Around the cavity, for the extent of four or five lines, the cerebral substance was softened, and marked with a great number of red points. In the anterior and posterior parts of the same hemisphere there were found several other small sanguineous effusions, with softening of the nervous substance around them. The cerebral pulp, where it is softened, presents an intensely red colour ; in some places it is merely dotted ; in other parts it is uniformly red, as if the cerebral substance had been steeped in red colouring matter.

This case is remarkable for the number of the hemorrhages which took place simultaneously, or at short intervals from each other, in the right hemisphere of the brain. Around each sanguineous effusion there was intense injection of the brain, with diminution of its consistence. Does not the hemorrhage here seem to be, as it were, the last degree of this lesion ? If this latter preceded the effusion, it was only by some seconds, as seems to be proved by the sudden manner in which the disease commenced. We have seldom seen so complete insensibility of the conjunctiva. In most of the cases wherein coma does exist, the eye-lids are still seen to approximate when the anterior surface of the globe of the eye is touched. The complete insensibility of this membrane coincided with a loss of sensation on the left side of the face. Such are several of the phenomena observed where the fifth pair of nerves are injured. We satisfied ourselves that this pair of nerves, in this case, was intact.

Case 15.—*Effusion of blood into the centre of each hemisphere—Sudden loss of consciousness—Resolution of the four extremities—Death the sixth day.*

A man, seventy-two years old, entered the La Charité, the 26th of February, in the following state :—Profound coma ; general insensibility of the skin ; resolution of the four extremities, which fall again as inert masses, when left to themselves, after being raised ; upper eye-lids half depressed over each eye ; no sign of vision ; slight winking when we attempt to touch the conjunctivæ ; respiration râlante. We ascertained that, for some time back, this person had frequently fallen into a swoon. On the 25th of February, at eleven o'clock at night, he had had one longer than usual, and did not come to himself again. This was all we could learn. Nothing particular occurred till his death, which took place on the 4th of March.

Post mortem. Serous infiltration of the pia mater of the convexity of the hemispheres. At the union of the posterior third with the anterior two-thirds of the right hemisphere, only an inch below the upper surface of this hemisphere, and two inches from the point of junction of this upper surface with the inner surface, there was found a cavity, which might contain a nut, and which was filled with coagulated black blood. The nervous substance around it was natural. In the left hemisphere, nearly in the same place, there was found a cavity of the same diameter, equally filled with coagulated blood, without softening, or unusual injection around it. Lungs infarcted ; white patches on the external surface of the heart ; hypertrophy of the parietes of the left ventricle ; bony incrustation at the base of the mitral valve ; bony patches in the aorta.

Remarks.—This case affords a striking example of the disagreement so often existing between the severity of the symptoms and the intensity of the lesions. The symptoms were those of very serious cerebral hemorrhage. We might have announced, by analogy with what is most usually observed, that a considerable portion of one of the hemispheres was the seat of a vast hemorrhagic cavity. Such was not the case, however. The effusion was very inconsiderable, but it was double ; and the close resemblance of the two effusions, their similar size, their situation in the same part of each hemisphere, the sound state of the cerebral substance around each, are not the least curious circumstances of this case. Was it because the hemorrhage was double, that, small as it was, it gave rise to such serious symptoms ? But we shall see, in the following case, a hemorrhage, also double, not followed by death, which took place from another cause, after the lapse of nine years.

CASE 16.—*Serous cyst in each cerebral hemisphere—Old apoplectic attack—Death nine years after this attack.*

A woman, sixty-eight years of age, stated to us, on her entering the hospital La Pitié, that, nine years before, she had had an attack of apoplexy, for which she kept her bed for at least two years, because during this time she said her limbs were very weak. She then began to get out of bed, and her limbs, by degrees, resumed their usual strength. When she came under our observation, she presented no trace of paralysis, and her intelligence was perfect. This woman laboured under a carcinomatous affection of the stomach, of which she died about a month after entering the hospital.

Post mortem. About two inches below the upper surface of the right hemisphere, at the union of the anterior two-fifths with the posterior three-fifths of this hemisphere, not far from the point where its upper surface inclines, in order to become external, was found a small cyst, with smooth transparent parietes, filled with limpid serum, without any change in the cerebral parenchyma around it. No change could be discovered in this hemisphere ; but in the opposite hemisphere, ou a level with, and external to the middle part of the corpus striatum, we found a second serous kyst precisely similar to the preceding.

On the posterior surface of the stomach was found a cancerous ulcer.

Remarks.—In this, as in the preceding case, blood was effused at the same time into each cerebral hemisphere, the patient having assured us that she had had but one attack of apoplexy. But whilst, in the former case, death took place rapidly, in the latter, not only the termination was not fatal, but, at the end of some years, all the symptoms which could announce the continuance of any alteration in the brain were seen entirely to disappear. Thus, in this case, the cessation of the functional disturbances preceded by a long time the complete disappearance of the lesion which caused them.

SECOND SECTION.

RECAPITULATION.

In this resumé we propose to detail the different functional disturbances to which cerebral hemorrhage gives rise, and to investigate how far the differences, which these disturbances present, may be explained either by the extent of the effusion, or by the difference of its seat.

CHAPTER I.

LESIONS OF MOTION.

The most characteristic symptom of cerebral hemorrhage is paralysis. We know of no instance of hemorrhage, however inconsiderable, taking place in the substance of the cerebral hemispheres,which was not accompanied by a diminution, more or less complete, more or less extensive, and more or less permanent, of the power of motion. In the cases above cited it may have been seen, that a very slight effusion was sufficient to produce paralysis ; that in general its intensity was in the direct ratio of the extent of the effusion ; that it took place no matter what parts of the cerebral hemispheres were the seat of the lesion, and that, in fine, the differences with respect to the seat of the hemorrhage had very little influence in determining what parts of the body were attacked with paralysis.

The paralysis developes itself at the very moment the effusion of blood takes place. It requires all at once its highest degree of intensity, then remains stationary, or goes on diminishing. Sometimes the paralysed part had not previously experienced any disturbance with respect either to sensation or motion ; sometimes, on the contrary, the patients had experienced in these parts pricking sensations, numbness permanent or transient, an unusual feeling of cold, a sense of weight, and a certain degree of debility. These different phenomena may announce two things : either the existence of a constant lesion, in the same point of the brain, where at a later period the hemorrhage shall take place,—as simple habitual sanguineous congestion, a softening which is still inconsiderable, some accidental production ; or else the more or less frequent return of a more serious congestion in the part of the brain where the blood is to be effused.

The paralysis following cerebral hemorrhage presents great varieties with respect to its seat, and pathological anatomy is far indeed from being always able to assign the cause of such numerous varieties.

This paralysis may be first distinguished into general and partial. The first is, when the two sides of the body, whether in their entire extent, or in some of their parts, are at once deprived of motion. This general paralysis we have observed in the three following cases :—

1st. In the case of simultaneous or successive hemorrhage in the two hemispheres.

2nd. In the case of considerable hemorrhage in only one hemisphere, with destruction of the parietes of the corresponding lateral ventricle, escape of blood into this ventricle, and from it into the other cerebral cavities, whether through the natural orifices of communication, or through the lacerated septum.

3rd. In the case of hemorrhage in only one hemisphere, without effusion of blood into the ventricles, the hemorrhage being considerable enough to have broken down the greater portion of the substance of the hemisphere.

In the case of general paralysis the four extremities, when raised, fall again as inert masses, and this state always coincides with loss of consciousness and profound coma. Sometimes it continues, and then the disease always terminates fatally. Sometimes at the end of a short period it disappears, and nothing remains but hemiplegia.

Again it may be remarked, that the existence of general paralysis indicates cerebral hemorrhage with much less certainty than paralysis of only one half the body. It is found accordingly in several brain affections widely differing from each other.

Partial paralysis, which has come on suddenly, is, on the contrary, one of the surest signs of hemorrhage in the cerebral hemispheres. This partial paralysis, which is much more common than the preceding, varies also very much with respect to the number of the parts affected. Whatever these parts be, it may be laid down as a law, that the paralysis affects the side of the body opposite to the hemisphere wherein the effusion of blood has taken place. The cases in which the contrary has been observed, are so few in number, that they can be considered but as very rare exceptions to the law just mentioned, which exceptions again have not yet been accounted for. Nor is it easier to say why hemorrhage in one hemisphere produces paralysis in the opposite side of the body. An attempt has been made to explain the phenomenon by the interlacing of the fibres of the upper part of the spinal cord; but in the first place this explanation can only be available for paralysis of the extremities; we cannot have recourse to it for that of other parts, as of the face, for instance, the paralysis of which, as well as that of the extremities, uniformly takes place on the side opposite that of the hemorrhage, whilst the nerves distributed to the muscles of the face arise above the crossing of the fibres of the cord.

The paralysis most frequently observed after a hemorrhage of the cerebral hemispheres, is, that of the two extremities of the side opposite that where the effusion of blood has taken place*. The cases we have cited have shown that a very inconsiderable hemorrhage, which affects scarcely a square inch of the substance of the hemispheres, may give rise to this hemiplegia. They have also satisfied us that the hemiplegia is equally produced, whatever be the point of the hemispheres wherein the effusion has taken place. Thus we have met it in cases where the hemorrhage had not passed the surface of the circumvolutions, just as in those where it occurred in the very centre of either hemisphere. We have also witnessed the hemiplegia in cases of hemorrhage strictly limited to the anterior, middle, or posterior lobe of one hemisphere, to the optic thalami, the corpora striata, and even to the cerebral peduncles.

When the two extremities are simultaneously affected with the paralysis, they may be so in an equal degree; but this is a rare case; it usually happens that the loss of motion is most complete in the upper extremity. Nothing is more common than to find this extremity wholly deprived of motion, whilst the leg and thigh of the same side are still capable of being moved at the will of the patient. Often too the leg performs considerable movements, when the patient is in bed; only these motions are somewhat slower than those of the opposite side, and the individual himself does not perceive that one of his lower extremities is affected, until he begins to walk; we may even observe that he drags one of the legs along, or that he supports himself on it rather unsteadily.

---

* Dr. Bright, vol. ii. p. 306, gives a case of hemiplegia on the left side, with cerebral lesion on the same side. See also Morgagni, Let. I. Epist. ii, § 16.—Tr.

The moment when the hemiplegia becomes established coincides in many cases with a total loss of consciousness, and then the fall may take place indifferently in any direction. But when this loss of consciousness does not take place, the patient feels the lower extremity, which has been just struck with paralysis, suddenly withdrawn from under him, and he falls, as a mass, on the side of the hemiplegia, whilst he preserves all his consciousness. In most of the cases published on cerebral hemorrhage, sufficient care has not been taken to distinguish the cases where the fall is caused by the paralysis suddenly supervening from those where it coincides with loss of consciousness.

Hemorrhage of the cerebral hemispheres may also produce paralysis of only a single extremity; sometimes of the upper, and sometimes the lower. The separate paralysis of the former we have found to be more common than that of the latter. We remember the case of a man, fifty years of age, who, having gone to bed quite well, was astonished on awaking at not being able to move his left arm, or to see with his right eye. This person has now for the last five months been paralysed in the upper extremity of the left side, and deprived of the sight of the right eye. In no other part is there the slightest trace of paralysis; he feels neither headach nor dizziness; his intelligence is perfectly unimpaired, and has not been disturbed for a single moment.

Some cases have been recently published with the view of proving that paralysis of the upper extremities depends on a lesion confined to the optic thalami, or to the nervous mass situated on a level with and posterior to them, and that paralysis of the lower extremities depends on a lesion of the corpora striata, or of the nervous mass situate on a level with and anterior to them. To determine the accuracy of this opinion, we too have interrogated facts*. Now, taking those only in which the lesion was perfectly limited, we found seventy-five of them in which this lesion (hemorrhage or otherwise) was circumscribed with sufficient exactness to qualify them for solving the question now before us.

Out of these seventy-five cases, we reckoned forty in which the two extremities of one side were paralysed at the same time. Of these forty, there were twenty-one in which the seat of the lesion was the anterior lobe or corpus striatum, and nineteen in which the lesion was seated in the posterior lobe or optic thalamus.

Of these seventy-five cases there were twenty-three in which the paralysis was confined to the upper extremity, in eleven of which the seat of the lesion was the corpus striatum or anterior lobe, in ten the lesion was seated in the optic thalamus or posterior lobe, and in two the seat of the lesion was the middle lobe.

Again, of these same seventy-five cases we found twelve others in which the paralysis was confined to the upper extremity, in ten of which the seat of the lesion was in the corpus striatum or anterior lobe, whilst in two the lesion was in the optic thalamus or posterior lobe.

From these facts we are led to the conclusion, that in the present state of science, we cannot yet assign in the brain a distinct seat to the motions of the upper and lower extremities. No doubt such distinct seat exists, since each of these extremities may be paralysed separately, but we do not yet know it.

At the same time that the extremities of one side of the body are paralysed, other parts also may be similarly affected, but in different degrees. These parts are most commonly the following :—

---

* Serres and Foville assert that lesions of the corpus striatum and anterior parts of the brain are followed by paralysis of the *lower extremities* of the opposite side, and that lesions of the optic thalamus, or posterior parts of the cerebrum, cause paralysis of the *upper extremities*. Some of the cases reported by Dr. Bright seem to countenance this opinion.—Tr.

The globes of the eyes.
The eyelids.
The different parts of the face.
The lips.
The tongue.
The neck.
The larynx.
The pharynx and œsophagus.
The bladder.
The rectum.

Of these parts there are none where paralysis is as common as that of the extremities, nor does it develope itself with equal frequency in the other parts. Thus the different parts of the face and the tongue are more frequently the seat of it than the other parts above mentioned. Let us trace, however, the paralysis in each of them.

Paralysis of the muscles which move the eyes is denoted by the constant deviation of the latter in some one direction ; it is then that strabismus is most generally observed : but this phenomenon itself is very rare, and it is scarcely ever noted in those numerous cases published on cerebral hemorrhage : we have ourselves met it but in a few cases. In order to its production, it is necessary that the muscles antagonising those which carry the eye downwards and inwards should be paralysed.

The muscles constituting the parietes of the cheeks lose the power of contraction much more frequently than the preceding in cases of hemorrhage of the cerebral hemispheres. The buccinator is the muscle whose paralysis is most perceptible. Every time the patient expires, one of the cheeks is observed to be distended passively, and also at the same time one half of the lips corresponding ; and when subsequently the patient wishes to masticate, the food introduced into the mouth, and placed on the side of the paralysed buccinator, can be no longer acted on by it, and collects between the cheek and the teeth until removed by mechanical force.

In all the cases observed by us, and in all those published with sufficient detail, the paralysis of the buccinator muscle has taken place on the same side as that of the extremities.

The passive distension of one of the cheeks we have generally found to take place only in very severe cases, and when there is at the same time loss of consciousness.

The muscles which move the lips often retain all their power of motion, so that their commissures present no deviation whatever. But at other times these muscles are paralysed ; and in consequence of their antagonism being destroyed, the commissure of the lips is drawn to the opposite side and outwards, and at the same time it inclines sometimes upwards and sometimes downwards. In the great majority of cases, the deviation of the commissure exists on the side opposite to the hemiplegia ; it is consequently on the same side as the paralysis of the limbs that the paralysis of the muscles takes place, by which the lips are moved. Oftentimes when there is no motion exercised, and as long as the mouth is shut, there appears no deviation, but this becomes perceptible when the patient speaks or smiles.

The degree of deviation of the mouth is not always in the direct ratio of the degree of hemiplegia. We have seen it very marked in cases where the paralysis of the limbs was very slight, whilst we have found it absent where the hemiplegia was complete.

The tongue, with respect to its movements, presents very different states in individuals attacked with cerebral hemorrhage. In the first place, its movements, in many instances, remain perfectly free. Several persons, who, after having continued some minutes unable to move it, appear suddenly to recover the freedom of its motion : they protrude it abruptly out of the mouth, after a great effort : but there are some movements which they cannot give the tongue, until after considerable intervals. In others, again, those movements are completely destroyed, and whatever efforts the patients may make, they cannot protrude the tongue from the mouth. Articulation*, however, may be still possible; sometimes there is considerable stammering, and at other times the patient is unable to articulate a word, and the tongue's motion is entirely destroyed. Others, again, are able to protrude the tongue from the mouth, but not in a straight direction, its apex deviating perceptibly to the right or left. According to our experience, whenever the apex of the tongue deviated, it was towards the paralysed side more frequently than the contrary; the latter deviation, however, scil. towards the sound side, has also been observed. Nothing but mere hypothesis has hitherto been proposed to account for the several modifications in the motions of the tongue†.

Paralysis of the muscles of the neck has been but rarely observed in cerebral hemorrhage. The head then inclines to the paralysed side, whilst the face inclines to the opposite side.

Paralysis of the muscles of respiration has been observed only in very alarming cases. In a very few instances, complete and sudden aphonia has been observed to supervene‡.

Paralysis of the muscles of the neck has been but rarely observed in cerebral hemorrhage. The head then inclines to the paralysed side, at the same time that the face inclines to the opposite side. We have never observed this paralysis as a consequence of sanguineous effusion in one of the cerebral hemispheres.

Paralysis of the muscles of respiration has been observed only in the most serious cases, in those to which the name of *apoplexia fulminans* has been given. In very few cases, complete and suddenly supervening aphonia has been observed. It was attributed to paralysis of the internal muscles of the larynx.

Paralysis of the muscular layer of the pharynx and œsophagus is observed only in the worst cases, and is usually a fatal symptom. Sometimes, however, it has been found to cease, the power of deglutition return, and the patient restored. In still rarer cases, the dysphagia has been one of the precursory phenomena of an attack of apoplexy.

Paralysis of the bladder is far from being a common phenomenon in individuals examined a considerable time after they have been struck with cerebral hemorrhage. Most of the old apoplectic cases received into the hospitals, do not present it. Very few also discharge the fæces involuntarily, and it is very doubtful whether the more or less obstinate constipation, experienced by several of them, depends on paralysis of the rectum. We shall recur, at a subsequent period, to the cause of this phenomena, when speaking of the state of the primæ viæ in apoplectic patients.

---

* The affection of the articulation may, as Dr. Bright says, loc. cit., arise from different causes: it sometimes depends almost entirely on paralysis of the muscles of the face; in which case by supporting the paralysed cheek with the hand, the indistinctness of the articulation is partially removed. In other cases, however, the defect lies in the muscles of the tongue and of the larynx, so that it is not possible to produce the sounds. In the latter cases, Dr. Bright has found the posterior part of the corpus striatum the seat either of pressure or of laceration. —Tr.

† That the apex of the tongue should deviate towards the paralytic side, may be inferred *à priori* by considering the muscular power which protrudes the tongue. This is accomplished by the posterior portion of the genio-glossus muscle, of which the fixed point is at the chin, and the moveable point at the base of the tongue. When this portion of the muscle acts, its two extremities are approximated, and the base of the tongue is thus drawn forwards towards the fixed attachment of the muscle. If this attachment be to the right of the median line, the base of the tongue is brought forwards and to the right, and, consequently, its apex forwards and to the left. See Lallemand, Letter 1st, p. 23.—Tr.

‡ When aphonia precedes or succeeds apoplexy, it is always to be considered an alarming symptom, as it shows that the internal cause which interrupts the nervous influence, is situated about the base of the brain, and, probably, in the medulla oblongata, which is considered the part of the nervous system most indispensible to life.—Tr.

Paralysis, which is really the result of cerebral hemorrhage, once produced, presents the essential character of continuing, even when all the other symptoms accompanying it have disappeared. When death supervenes at the end of some days, the paralysis terminates only with life; when, on the contrary, death does not take place till several months or several years after the apoplectic attack, three cases may then present themselves:—either the paralysis continues in all its intensity till the death of the patient, or else it diminishes progressively, without completely disappearing, or else, in fine, it disappears altogether.

In the first of these three cases, the paralysis sometimes continues simple, and no other lesion of motion is complicated with it; sometimes it is accompanied, at the end of a shorter or longer period, with a certain degree of rigidity, and even of real contraction. In such cases, we usually find, on examining, after death, different alterations around the seat of the hemorrhagic cyst, either more or less extensive softening, or considerable induration of the cerebral substance.

Frequently also, in such cases, the paralysed limbs waste away perceptibly, which probably depends on their continued loss of motion.

In the second case just mentioned, there is a gradual diminution of the paralysis, but at the end of several years we still find traces of it, The limbs may, to be sure, be capable of executing several movements, but they possess not the activity of those of the opposite side; they seem insensible to the patient, who raises them with difficulty; the fingers remain habitually flexed, and the hand cannot grasp objects firmly; the patients are able to walk, but they drag the limb a little.

When, in such cases, the cerebral hemispheres are examined, there is found in one point of them, either a serous kyst, or an oblong whitish line, surrounded by a portion of parenchyma a little hardened. We saw one case where a second attack of apoplexy terminated the life of a patient, who, twenty-seven years before, had experienced the first attack. In the time between the attacks, this person felt merely a weakness of the two extremities of the left side; he used them, but with less freedom than those of the opposite side. Towards the middle of the right optic thalamus, there was found a hard line of a dull white, being six lines in extent from before backwards. Around it, there was no alteration of the nervous substance. There was a recent effusion of blood into another part of the brain.

The third case mentioned is that where, at the end of a shorter or longer period the paralysis entirely disappears, either in all the parts attacked with it, or in some only. The parts where it disappears first, are generally the tongue, the lips, the face, and, lastly, the extremities. In almost all cases the leg recovers its power of motion before the arm: and there are cases where the patients have attained the power of using both the lower extremities with equal facility, though one of the upper extremities was still weaker than the other.

On examining the encephalon of persons in whom a paralysis which has existed for a long time has finally disappeared, it may happen that no perceptible alteration is found in the nervous substance; even the whitish line, the last vestige of the hemorrhage, has ceased to exist. But at other times, we still discover in the hemispheres different lesions, such as cysts of variable size; and yet, a considerable time before death, every species of paralysis had disappeared. Here then is one and the same state of the brain with which, according to the individuals, paralysis may exist or not; another proof that beyond the morbid states appreciable on the dead body, there are others quite as important which escape the researches of the anatomist, and which add their all-powerful influence to that of the former, in permitting or preventing the manifestation of the functional disturbance.

We have already seen that in cases of paralysis of long standing, the limbs deprived a long time of motion become rigid, or present in a more or less marked manner the phenomenon of permanent flexion. But this is not all: in some cases, from the time succeeding the hemorrhage, spasmodic and convulsive motions appear at intervals in the paralysed limbs, and at the same time also the side of the face deprived of motion is agitated by more or less violent contractions. It would seem then that in virtue of peculiarity of disposition, the effused blood acts as a stimulant on the nervous tissue, which gives rise to irritation of the latter, and to the appearance of those phenomena which have been just mentioned. In cases of this kind, we have sometimes found after death no particular lesion around the effused blood ; sometimes we have discovered around it either a bright red injection of the nervous substance, or a perceptible diminution of its consistence, with a red colouring more or less marked ; so that here again we have the same functional disturbances, whether we find or do not find on the dead body alterations to explain them. We also meet, from time to time, cases of cerebral hemorrhage in which, at the same time that one side of the body is affected with paralysis, the other is agitated with convulsive movements. Under such circumstances there is anormal stimulation of the hemisphere opposite to that where the hemorrhage has taken place. The perceptible traces of this stimulation are found sometimes in the nervous substance itself, which is injected or softened, sometimes in the membranes, which are red, thickened, infiltrated with pus, &c.

CHAPTER II.

LESIONS OF SENSIBILITY.

These lesions are much more constant in cases of cerebral hemorrhage, than those of motility ; and, up to the present time, it has been impossible to detect, in the nature or in the seat of the alterations of the brain, the cause which sometimes suffers the sensibility to be intact, and sometimes produces its more or less complete abolition.

We shall now consider these lesions of sensibility : 1st, in the skin ; 2ndly, at the surface of the different mucous membranes, capable of being touched ; 3rdly, in the organs of sight, of hearing, of taste, and of smell ; 4thly, in the encephalon itself.

1. *Lesions of the cutaneous sensibility.*

These must be considered at two periods ; both before the hemorrhage has taken place, and after its occurrence. Before the period when the hemorrhage comes on, many persons experience nothing particular towards the cutaneous periphery ; but with others it is not so. The pulp of the fingers becomes the seat of divers sensations ; several complain of having in this part a singular feeling of cold, a sort of numbness similar to what is felt when the hand is plunged into frozen water ; others complain of pricking sensations, or annoying formication towards the extremity of the fingers ; others, again, fancy that there is a piece of cloth interposed between the skin of their fingers and the body which they would touch : so much blunted is their sensibility.

These different sensations may be confined to the hands ; they may extend to the feet ; they may even manifest themselves at other points, either of the extremities, or of the face or trunk. We have seen the case of a man, who before being struck with apoplexy, experienced from time to time complete loss of sensation in some isolated points of the skin of the thorax. Each of these points, which were to the number of five or six, might be about the size of a five franc piece. There the skin might be pinched ever so severely, without the patient seeming to feel the slightest pain ; outside these points the sensibility was intact, and it soon re-appeared in all its integrity. These partial abolitions of the sensibility were not constant; there were some days when the sensibility was not diminished in any part; then suddenly it disappeared from the parts just now mentioned. Another patient, after having left the La Pitié, where he had been treated for an intense erysipelas, principally seated in the left side of the face, cranium, neck, and back, entered again at the end of two months with total loss of the sensibility of the different parts of the skin, where the erysipelas had been. Thus the skin of the face of the left side, that of the scalp of the same side, and also that of the neck, from the median line to the level of the top of the shoulder, had lost all sensation. On this same side, hearing, sight, smell, and taste, were also nearly destroyed; the motility of the parts affected had not, however, undergone any change. This patient had for the last six weeks experienced almost constant dizziness, and it was nearly since that same period that he commenced to lose the sensibility in all the portion of the skin previously affected with erysipelas. Was there not in this case a specific affection of the fifth pair of nerves?

The perversions of cutaneous sensibility preceding the apoplectic attack, may develope themselves always in the same point, or seize on different parts one after the other: they may manifest themselves on both sides of the body at once, or confine themselves merely to one, and in the latter case the side which they affect will in general be that which, at a subsequent period, will become paralysed.

Nothing is more uncertain than the time intervening between the lesion of the sensibility and the apoplectic attack. In several cases we have seen the sensibility modified only a few days before the appearance of the symptoms of cerebral hemorrhage; in others numbness, formications of the extremities, manifested themselves some years before the occurrence of the hemorrhage.

Let us now trace the modifications which the cutaneous sensibility may undergo, after the cerebral hemorrhage has appeared.

The abolition of sensibility does not always accompany loss of motion: when it does take place, it is generally seated in the parts, whose power of motion has been modified. We have seen some cases, however, in which it was not so. In a man, for instance, who entered the La Pitié, in the year 1831, we made the following observations:—

This person, sixty years of age, after having for a long time experienced a pain of the head, seated principally in the right anterior lateral part of the cranium, suddenly lost the faculty of seeing on the same side where the headach existed, and at the same time the pupil of the right eye was contracted in an extraordinary manner. For about six weeks the right eye remained thus deprived of sight, without any other phenomenon appearing. But at the end of this time the right side of the face lost all sensibility, without its motive powers being at first in any way changed. From fifteen to twenty days the sensibility remained thus lost on the right side of the face, then the upper extremity of the left side became evidently weaker than the other, without the cutaneous sensibility in this extremity being changed, and nearly at the same period the muscles of the right side of the face began to become paralysed, and the mouth was slightly drawn towards the opposite side. There was not in this case the slightest loss of consciousness.

We shall not here discuss what the lesion was, which in the individual, whose case we have just now mentioned, produced this double modification of sensation and motion; we mentioned the case merely to point out the extraordinary circumstance of loss of sensation on the right, and of motion on the left. In this case, again, there is another peculiarity: it is this, that the paralysis of motion came on in the left side of the face, that is, in the side opposite that of the paralysed limb. Now this circumstance establishes a striking exception to the law which we previously laid down.

According to the time which elapses from the apoplectic attack, the cutaneous sensibility re-appears, and most usually it is found almost completely re-established at a time when the paralysis of motion still remains undiminished. However, the fingers often continue benumbed and cold ; but that may depend in a great measure on the privation of motion producing a degree of languor in the capillary circulation.

2. *Lesions of the sensibility of the mucous membranes.*

In those cases where the sight is lost, the eyelids are made to approximate by touching the conjunctiva with the finger. There are, however, cases in which this membrane becomes so insensible, that the end of the finger may be passed over the entire anterior surface of the globe of the eye, without the eyelids approximating, or without the patient's evincing the slightest sign of pain, and that at a time when in other parts the sensibility is still sufficiently acute. One of our cases furnished us with a very remarkable instance of that kind. This insensibility is similar to that which may be produced in animals by dividing the fifth pair of nerves.

On introducing a feather into each of the nostrils, we ascertained in some apoplectic patients a notable diminution of sensation on one of the halves of the mucous membrane of the nasal fossæ. Some have told us that on introducing their food into each side of the mouth alternately, there was one side in which the contact of the food with the mucous membrane of the mouth was felt much less distinctly than in the other. We particularly ascertained this diminution of sensibility of one of the sides of the mouth and one of the nostrils in an individual, the corresponding side of all whose face was likewise deprived of sensibility, whilst the power of motion remained intact ; in no other part was it altered : sight and hearing were also much weaker on this same side than on the opposite side.

These different modifications of sensibility seem to indicate that there are cases where hemorrhage of the cerebral hemispheres, whatever be its seat, exercises an influence on the fifth pair of nerves.

3. *Lesions of the functions of the organs of the senses.*

In a considerable number of cases vision is not modified. When it is disturbed, it may be so before the hemorrhage takes place, at the very time when it has occurred, or after its occurrence.

Before the hemorrhage, several persons experience, on the part of vision, strange sensations, real hallucinations. With some, all objects appear to be coloured red ; other fancy that a red line borders all bodies ; a sensation similar to what is experienced when the eyes have been for some time exposed to the impression of a strong light. There are some who cannot look attentively at an object without seeing it dotted with red or black points ; others have a constant mist interposed between their sight and the object they are looking at. Some are tormented by the appearance of flies, which seem to them constantly dancing before their eyes.

It must not, however, be supposed that these different hallucinations of vision lead necessarily to cerebral hemorrhage. We have had an opportunity of observing a person who, for several years, was constantly tormented by the imaginary sight of small bodies of different forms and colours dancing before his eyes : if he would look steadily at an object, he saw it dotted with a number of black points ; this hallucination, which was permanent, prevented his being able to read or write ; he had neither dizziness, vertigo, nor headach ; the conjunctivæ were habitually red, and he could not endure without considerable suffering a more than ordinary strong light.

Diplopia has been occasionally observed a certain time before the supervention of an attack of apoplexy.

Other persons have been suddenly struck with blindness, and the loss of sight was with them the principal precursor of cerebral hemorrhage. We have seen a locksmith who, after having experienced considerable dizziness of the head for eight days, suddenly lost his sight. After having remained blind for fifteen days, he suddenly fell down deprived of consciousness, and paralysed on the right side; consciousness soon returned; the hemiplegia continued, but what was very remarkable, some time after the attack he began to recover his sight, which however continued very weak with him. We saw another individual in whom, during the month preceding the attack, the sight was completely lost three different times: he suddenly became blind; the blindness continued from forty-eight to sixty hours; he then recovered his sight.

In a word, individuals have been observed, in whom, for some time before the attack, their vision acquired unusual sharpness.

Such are the principal phenomena which manifest themselves as connected with sight, a longer or shorter time before the hemorrhage supervenes. Their existence proves indisputably, that before the blood is effused, there is already going on in the brain a morbid process, either continued, or intermittent, the nature of which it would be a matter of great importance precisely to determine.

Once the hemorrhage has come on, the sight may remain unaffected; but it may also be lost. Sometimes it is lost on both sides; that takes place in violent apoplexy, when the hemorrhage is very extensive. Sometimes, on the contrary, the power of vision disappears only on one side; but here, two different cases have been observed: in the one case, the sight is lost on the side where the paralysis of the limbs exists; in the other case, the patient does not see with the eye of the side opposite the paralysed side of the body.

We have investigated how far the hemorrhage occupied a particular seat in those cases, where, after its occurrence, the sight continued affected, and this seat we have never been able to discover. We might cite cases here, either from our own practice, or which have been recorded by other writers, in which we might find different alterations of vision, though the most different parts of the hemispheres were the seat of the hemorrhage. We do not admit them, with M. Serres, that sight is lost only when the hemorrhage has its seat in the optic thalami, on the level of the commissure. We shall see, as we go on, that lesions of the cerebellum are also accompanied with different disturbances of vision, and in particular with amaurosis. In the face of so many facts, which show us constantly, in the alterations of the brain, the most different seats, to explain the disturbance of one and the same function, shall we deny that certain parts of the brain are particularly destined for the performance of certain acts? We would have no right to do so; for it is probable that certain points of the brain have such a relation among them, that the lesion of such a one among them will re-act, in particular, on such another; and this will probably be the secondary alteration of the latter, unappreciable by the scalpel, which is to produce the peculiar functional disturbance.

The sense of hearing may present before, during, and after the cerebral hemorrhage, the same modifications as the sense of vision. Before the hemorrhage, there are some who are annoyed with buzzing in the ears, continual or intermittent tingling. Several fancy they hear the strangest noises. These hallucinations are, however, far from being the constant prelude to an attack of apoplexy; they may be connected with mere perversions of sensibility, and have nothing whatever to do with cerebral congestion.

We have no particular observations to make on the modifications produced in the senses of taste and smell, by hemorrhage of the cerebral hemispheres.

4. *Lesions of sensibility seated in the encephalon itself.*

Pain of head, more or less intense, dizziness, vertigo, often precede cerebral hemorrhage. There are some persons, who, for several months, are constantly affected with the signs of cerebral congestion; one day it becomes more violent and the hemorrhage takes place. We cannot understand how persons can deny such a precursor, and assert, that it takes place only in cases of softening. We acknowledge besides, that it is often completely wanting, and that individuals may be suddenly struck with cerebral hemorrhage, without ever having before presented the least symptom as referrible to the brain, without having ever complained either of headach, dizziness, &c.

After the hemorrhage, there is no additional phenomenon observed, we merely see the same symptoms continue in a great number of cases (such as vertigo, &c.), as had been the precursors of the disease.

CHAPTER III.

LESIONS OF INTELLIGENCE.

In the same manner as the lesions of motion and sensation, these also must be considered, before the hemorrhage has taken place, and after it has occurred.

Several persons preserve all the clearness and strength of their intelligence up to the moment when they are struck with apoplexy. In others, there are observed, a shorter or longer time before this period, some changes in the intellectual faculties; sometimes they are as it were benumbed; sometimes, on the contrary, they manifest an extraordinary excitement. Some patients lose their memory; there are moments when they know neither where they are, nor what they do, nor what they say. We here give some instances of these aberrations of intelligence, which we have had an opportunity of observing.

A woman, whose reason had been up to that period perfectly sound, gave herself up all at once, without any obvious cause, to violent fits of passion; she became frantic, and was conveyed to the La Charité, in a state resembling mania; on the very evening of her entering the hospital, she was struck with apoplexy, of which she died in less than thirty hours. On opening the body, we found in one of the cerebral hemispheres an enormous effusion of blood.

A man, about fifty years of age, forgets his own name: he is from time to time convinced that he is dead; he no longer recognises his own immediate relatives; he remains fifteen days in this state; then he is struck with apoplexy; the post mortem examination again shows, in this case, an effusion of blood within the hemispheres: no other lesion was discovered.

Another man becomes incapable of attending to any occupation: he remains constantly seated, and his eyes, as it were, weighed down with sleep; we could with difficulty elicit from him some few answers; this state terminated by an attack of apoplexy.

Several similar cases have been seen by practitioners; they clearly prove that before the time the hemorrhage takes place, there may be already in the brain a morbid state, which is the precursor of it, and which may manifest itself by divers disturbances of motion, sensation, or intelligence.

Other persons experience, at several different times, sudden losses of consciousness; they fall suddenly into a profound coma, and it is supposed that they are under the influence of cerebral hemorrhage. But this coma disappears, and they are restored to perfect health, until a new *coup de sang* returns. At last, a time comes, when, instead of a simple congestion, by which all these phenomena might be explained, there comes on a real hemorrhage, the effects of which are no longer transient, as those of the congestion which preceded it.

Even at the time the hemorrhage takes place, three cases may present themselves with respect to the modifications which the intelligence undergoes.

In the first place, it is perfectly intact, and the serious alteration which the power of motion then suddenly undergoes, brings no disturbance on the exercise of the intellectual faculties.

In a second case, the intelligence becomes more or less dull, at the same time that the limbs are paralysed. The patient falls into a stupor ; others form incoherent resolves, or utter some unintelligible words ; however, they are still conscious of the external world, and they are still able to hold relation with it.

In a third case, on the contrary, the loss of consciousness is complete. The patients are plunged into a state of coma, from which the most energetic excitements cannot arouse them. Only sometimes, after being spoken to with a very loud voice for the purpose of awakening them, they open their eyes slowly, and stare for some seconds on the person who is watching them ; but they soon relapse into their lethargic sleep.

These differences in the state of the intelligence at the time the attack of apoplexy takes place, depend principally on the greater or less extent of the effusion. With respect to the seat of the latter, it has not appeared to us to exercise any great influence on the intellectual faculties. Not only have we seen the loss of consciousness coincide with hemorrhage in all possible points of the cerebral hemispheres, but we have even found it in cases where the hemorrhage had its seat outside the hemispheres, in the cerebellum for example, or in the pons Varolii. Dr. Fabre has cited the very interesting case of an old man, who died of an attack of apoplexy, accompanied with complete loss of consciousness, in whom the nervous centres presented no other lesion than an effusion of blood into the substance of the left anterior pyramid ; a very striking example, no doubt, of the wonderful connexion which holds together and brings into unity of action all the parts of the nervous system.

After the effusion of blood has taken place, the coma may remain, the patient does not recover consciousness, and in this case death soon arrives. In the most favourable cases, and which are far from being rare, the state of coma disappears ; but once the individual has come to himself, the intelligence does not always present the same conditions. In a very small number of cases, it is perfectly re-established ; most frequently it remains enfeebled ; the patient retains sufficient reason to be able to attend to the concerns of common life ; but he has become incapable of deep or profound reflection ; he can no longer join, without distress, in a conversation of any length, or of a serious nature, and it is necessary to debar him from it, otherwise his state may be made worse.

Instead of this simple weakness, the intelligence may present a more serious alteration. Thus we see a great number of apoplectic patients fall into a real state of childishness, or of senile dotage ; they shed tears with extraordinary facility. Others are seized, from time to time, with a delirium, which resembles that so often induced by acute inflammation of the meninges ; and, in fact, it may be supposed that in such cases it is caused by the occurrence of an irritation of the arachnoid which covers the affected hemisphere. Madness, in a word, has been seen to declare itself after a cerebral hemorrhage.

There is a phenomenon observed rather frequently after an effusion of blood into the brain : that is, loss of speech. It may exist with a perfect integrity of intelligence. Sometimes this accidental dumbness soon disappears ; sometimes the speech is not recovered till after the expiration of a considerable time ; sometimes, in a word, it continues for ever lost.

Mr. Professor Bouillaud published, some years since, a paper containing some curious facts, from which he thought he might conclude, that the formation of speech has for its instrument the anterior extremity of each hemisphere, he having found this part the seat of lesion every time that, during life, speech itself had been lost. What our researches on this subject have led us to conclude, is as follows:—

Out of thirty-seven cases observed by ourselves or by others, relative to hemorrhages or other lesions, in which the morbid change resided in one of the anterior lobes, or in both, speech was abolished twenty-one times, and retained sixteen times.

On the other hand, we have collected fourteen cases, where the speech was abolished without any alteration in the anterior lobes. Of these fourteen cases, seven were connected with diseases of the middle lobes, and seven with diseases of the posterior lobes.

The loss of speech is not, then, the necessary result of the lesion of the anterior lobes, and, besides, it may take place in cases where anatomy does not show any alteration in these lobes. M. Lallemand* has cited a case in which there was found no other alteration than a softening of the white substance of the left lobe of the cerebellum; in this case, however, to which we shall take occasion to return for another purpose, the faculty of speech was completely lost.

In M. Ollivier's work on the spinal cord†, you will find the case of an individual, in whom occurred the phenomenon of loss of speech, at first partial, and then complete. In this case, it was in the pons that the alteration existed; it was found softened at its lower surface to an extent equal, at least, to the size of a filbert.

CHAPTER IV.

LESIONS OF THE FUNCTIONS OF THE ORGANS OF NUTRITIVE LIFE.

Among these functions, there is but one which is specially affected by cerebral hemorrhage; and, again, the latter must be rather considerable, or, what comes to the same thing, it must find the individual so predisposed, that a slight effusion will produce in the brain a greater disturbance than would seem to be compatible with the intensity of the lesion. Then the respiration presents a particular character, which is designated by the term *stertorous*. Must we admit, with M. Serres, that this function is particularly affected, in the case in which the hemorrhage is seated in the optic thalamus and its radiations‡?

The stertor of the respiration is, in general, a very fatal sign; and individuals who present it in a marked manner, seldom escape a speedy death. To account for it, there is found in the dead body considerable infarction of the lungs, and a great quantity of frothy mucus in the bronchi. It is certainly in consequence of the embarrassment of the respiration that persons struck with cerebral hemorrhage die, in the case where the attack is severe, and where they die promptly.

The circulation presents divers disturbances: the heart frequently beats with strength, but this strength is rather in reference to its preceding state than to the cerebral disease itself. The pulse is variable; it is, however, more frequently slow than frequent. The capillary circulation presents nothing observable, except towards the face, which assumes a different appearance according to the individuals; sometimes it is red, considerably injected, and the conjunctivæ participate in this hyperemy; sometimes, on the contrary, it is pale; and it is now known that this paleness should not exclude the idea of a cerebral hemorrhage, and that it does not announce the existence of a serous apoplexy, as was supposed previous to the researches of Portal on this subject.

---

* Letter ii. p. 134. † Tom. ii. p. 614. ‡ Anatomie Comparée du Cerveau, tom. ii.

Among the phenomena which occasionally precede cerebral hemorrhage, or else which follow it, must be placed small effusions of blood, which take place in some persons into the tissue of the conjunctiva.

The digestive functions present no special disturbance, except frequently obstinate constipation, which is not always overcome by drastic purgatives. It should be remarked, however, that the absence of alvine evacuations, in such cases, is far from indicating an insensibility* of the mucous membrane to the action of irritating substances brought in contact with it; for we have frequently found a bright red injection on the internal surface of the intestine, and particularly of the large intestine, in persons who had had no alvine dejection, though purgatives had been given them several days in succession, either by the mouth or the rectum. Observe, also, that if the employment of these means be continued, the tongue soon becomes red and dry, the pulse becomes accelerated, the temperature of the skin is raised, and a gastro-enteritis soon comes to add its danger to that of the cerebral affection. It would be an egregious error to suppose that, in such a case, the inflammation produced in the digestive tube acts as a revulsive, and must lessen the severity of the cerebral symptoms; far from it, we have always seen the gastro-intestinal inflammation exasperate these very symptoms. Besides, this gastro-enteritis may itself arise spontaneously at a period more or less remote from that at which the hemorrhage took place; and, in very many instances, it is of the inflammation of the intestine that old paralytic patients die, in whose brain there exists a hemorrhagic cavity of long standing. Most usually the gastro-enteritis then assumes the form called adynamic, and it is accompanied with the formation of eschars on those parts of the body on which any pressure is made.

---

* An observation of Lallemand's, on the diminution of sensibility in the bladder, in affections of the brain, may not be here considered out of place:—"It is to the diminution of the sensibility that we must attribute the distension of the bladder, and the inflammation of its mucous membrane, observed so frequently in diseases of the brain and of its membranes, when such diseases are accompanied with stupor, drowsiness, &c. The patient makes no effort to expel the urine contained in the bladder, because he does not perceive the impression made by it on the mucous membrane; consequently it accumulates there, and distends its parietes as long as they admit of it; then the resistance which the urine experiences from them being greater than that presented by the neck of the bladder and the urethra, according as a new quantity comes into the bladder, it flows out in the same proportion, and with the same velocity as it is conveyed by the ureters, that is, drop by drop. As the patients are, in general, soaked in the urine, persons suspect an incontinence, produced by paralysis of the sphincters, rather than the species of retention of which we speak; the result of this prolonged sojourn of a great quantity of urine in the bladder is, that a potrion of it is absorbed, as is proved by the urinous smell which the transpiration often acquires; it is partly decomposed there, as is demonstrated by its fetid odour, and the rapid alteration of the silver catheters, which, when drawn from the bladder, are found to be blackened, being covered, in fact, with sulphuretted hydrogen. After death, the mucous membrane of the bladder is found injected, and covered with patches or bloody points: the fundus of the bladder is often full of purulent mucus. The frequency of these inflammations, the circumstances accompanying them, will not suffer us to consider them purely accidental; it is very probable that they are owing to the long continued impression of the urine, which is already partly decomposed."—Lallemand's Letters, ii. p. 236. It is evident, that when M. Andral denies that the sensibility of the mucous membrane is affected, in brain affections, and when Lallemand assumes, that the sensibility of the mucous membrane of the urinary bladder is diminished in the same affection, they do not mean the same kind of sensibility. M. Andral speaks of the organic sensibility; Lallemand, of the animal sensibility. The same reason for the cystitis in the one case will hold good for the gastro-enteritis in the other.—Tr.

SUPPLEMENT.

SANGUINEOUS CONGESTIONS AND EFFUSIONS AFFECTING THE SPINAL SYSTEM *.

When we carefully examine the vascular system of the spine and spinal marrow, in individuals advanced in years, we are struck with the great number of dilatations which we find in the different points of its extent. This phenomenon, which is frequently observed, results from numerous causes. Some depend on the peculiar distribution and arrangement of the spinal vessels, particularly of the veins, which are entirely destitute of valves; and though their anastomoses are considerable and frequent, it is easy to see that the circulation in them goes on slowly, and with difficulty, and that it may often experience greater or less obstruction. I have frequently found in aged persons fibrinous clots filling all the venous ramifications of the cord, as also those accompanying its nerves, clots the presence of which, resulting from the prolonged stagnation of the blood in these vessels, proved the slowness of the course of this fluid.

On the other hand, the direct influence of the respiration on this portion of the circulatory system, produces in it numerous modifications, and becomes even the source of obstacles to this circulation, either in the state of health or of disease. This is what takes place in violent exertions, strong emotions, and in those affections which disturb in a more or less marked manner the act of respiration. From these considerations it is hard to think that repeated congestions in this deep-seated region should be without its influence on the functions which the spinal cord and its nerves are called on to fulfil, when we see the great disturbance produced by a slight and a nearly analogous congestion in the functions of the brain. This analogy is real with respect to the effects of those congestions, but not with respect to their seat, for it is evident that here it is principally in the vessels external to the cord, and not in those of its tissue, that the afflux of blood exists.

These reflections were suggested from observing several individuals affected with paralysis, sometimes general, but incomplete, without lesion of the intellectual faculties, and who recovered sensation and motion after a shorter or longer time. I doubt not from different post mortem examinations which I have made regarding this subject, but that we should attribute those symptoms to a more or less rapid accumulation of blood in the spinal vessels, an accumulation which itself becomes the cause of a more copious exhalation of the vertebral liquid. I have in general remarked that the quantity of serum in the vertebral canal was so much the greater, according as there was a greater congestion in the veins of the spine, and of the membranous coverings of the cord. Thus the slowness and difficulty of the course of the venous blood may be here the causes of a dropsy, which is independent of inflammation of the spinal membranes, a fact of which numerous instances have been already cited for the other serous cavities†.

Such is the source of the more or less painful numbness of the limbs with weakness of motion, which is remarked in certain persons, and which extends successively from the lower extremities to the trunk and upper extremities. The patients remain lying on their back in a state of general but incomplete paralysis; the movements of the thorax are sometimes lessened, and the respiration, which is in other respects regular, seems to be performed merely by the external respiratory muscles and the diaphragm; the general circulation does not seem to be sensibly affected. In this paralysis we often see patients gradually recover motion and sensation, and the symptoms disappear from above downwards. The functions of the rectum and the bladder are but little disturbed, and the intellectual faculties remain intact.

Before proceeding further, I shall insist on this latter circumstance to establish the difference which exists between this incomplete general paralysis, and that which is oftentimes observed in lunatics, particularly those whose mental malady results from masturbation, venereal excess, abuse of spirituous liquors, prolonged use of mercury, great chagrin, fatigue, and exertion of mind: we also see it succeed to alienations which have been accompanied with very violent agitation. In this species of paralysis, the embarrassment of speech is the first symptom which manifests itself, together with a defect of steadiness in walking; this difficulty in the motion of the tongue and of the lower extremities increases progressively and simultaneously; the upper extremities then become heavier, their movements become embarrassed, and the individuals die after some years in a state of general paralysis, more or less complete, with the remains of a sensibility more or less obtuse.

The progress of this affection presents, as we see, a particular character which distinguishes

---

* The above has been condensed from Ollivier's Traité de la Moelle Epinière, &c., vol. ii., p. 448.

† Dict. de Méd., art. *Hydropsie.*

it from that with which I am here engaged. The symptoms of a cerebral lesion accompany the paralysis of the lower extremities, whilst nothing similar is observed in the paralysis which results from spinal congestion, the persons on whom it manifests itself presenting no sign of an affection of the brain. What is more, we see in the numerous cases collected by M. Calmeil, that in certain cases the encephalon of lunatics presents nothing which can explain the phenomena observed during life; I doubt not that sanguineous congestions then contribute, and oftener than is supposed, to produce those lesions of motion and sensation—congestions, the traces of which disappear sometimes at the moment of death, but whose existence is here so much the more probable, as the entire nervous centre is the seat of greater excitation, and of a more considerable afflux of the fluids. The facts which I give will render this opinion much more probable.

When the congestion is very active, it may be accompanied with pains in the dorsal region, which extend from below upwards, according as the paralysis extends in the same direction. It is easily conceived that the serous exhalation, which increases from the moment the sanguineous congestion takes place, should contribute at the same time to increase the paralysis, by compressing the spinal marrow still more. The following case, taken at the Hôpital Necker, presents an example of these different phenomena:—

Case* 55.—*Numbness of the lower extremities—Incomplete paraplegia limited to the lower half of the trunk, and extending progressively to the rest of the trunk and upper extremities, accompanied with pain in the back—Absence of cerebral symptoms —Successive disappearance of the phenomena—Cure.*

A man, twenty years of age, a locksmith, entered the Hôpital Necker, the 11th October, 1822, presenting all the symptoms of gastro-intestinal irritation, with continued fever. He had successively four copious nasal hemorrhages, on the 7th, 14th, 21st, and 28th days, without any favourable result. The symptoms did not cease to increase in intensity up to the 30th day. From that period they diminished gradually to the 60th day; convalescence was merely interrupted by some temporary relapses of the inflammation of the intestines. The cure appeared complete, and the patient now complained of nothing but general debility, the result of his treatment, when one night having gone out of bed, and walked a few steps (in February), he felt, on a sudden, a marked numbness in the lower extremities, which bent under him, and he fell. He was scarcely conveyed to his bed, when he threw up several times a considerable quantity of very liquid yellowish bile; the skin was hot, and pulse frequent; no disturbance of the intellectual faculties; the patient could not sleep.

The following day, his state nearly the same; paraplegia incomplete; continual formication of the skin, which somewhat impaired its sensibility. This numbness did not ascend higher than the epigastrium. An acute pain existed along the spine as far as the middle of the dorsal region; motion increased it; upper extremities completely free (ammoniacal frictions along the site of the dorsal pain, blister to the loins). He continued in the same state till the fourth day, when the pains of the back increased, they extended as far as the neck, and the two upper extremities were weaker and benumbed. The patient could not grasp anything firmly in his hands; skin hot and dry; pulse frequent. A blister was applied to the nape of the neck. The fifth day, the numbness of the upper extremities increased a little, as also the dorsal pains. Ever since the third day a small eschar had come upon the sacrum, as broad as a twenty sous piece, which had not taken place during the entire illness, which had been very long, though he had constantly lain on his back, and his body was very much wasted.

The sixth day, all the symptoms began to diminish in intensity, and on the 4th of March he left the hospital, having recovered his strength and flesh, and no longer feeling any annoyance, except a little weakness in the lower extremities, which has since completely disappeared.

Is it not very probable, that the phenomena presented by this patient were the result of a very active spinal congestion, for we see here none of the symptoms characterising meningitis? On the other hand, if we consider the multiplied connexions of the spinal marrow with the internal viscera, we shall be less surprised to see an affection of this nervous centre after an acute and long-continued gastro-intestinal irritation. This secondary affection was, in some degree, confirmed by the rapid formation of the eschar on the sacrum; a phenomenon which was not observed up to that period, and which is generally common in the alterations of the spinal marrow or its membranes. It is probable that the accumulation of blood would have been less, if there had been applied a great number of leeches, or the cupping-glass, along the spine, instead of the irritating means which had been employed. Was there, at the same time, an increase in the serous exhalation, and a progressive absorption of the liquid? This supposition is not without foundation.

I have already remarked what influence the respiration exercised over the venous circulation of the spine. It is easy then to conceive that if in a person disposed to such congestions as these, there should supervene any serious alteration of the respiratory organs, the symptoms may become intense; the sanguineous congestion increases more and more; it also contributes to increase the difficulty of respiration caused by the pulmonary affection, and the patient dies in a state resembling asphyxia. I examined the body of an individual who had been affected with incomplete paralysis in the movement of the trunk and extremities, with morbid exaltation of the cutaneous sensibility. This paralysis, which in its course had followed the progress I have marked out, had gradually diminished, and was nearly gone, when it again appeared simultaneously with a pleuro-pneumonia. This latter disease made rather rapid progress, and the paralysis was observed to go on increasing till his death; so that a few days before he died the patient had relapsed into the same state of paralysis, with extreme sensibility of the integuments. The upper and lower extremities performed but very feeble and general movements; respiration was extremely painful, and the movements of the chest were almost imperceptible. He preserved to the last the free use of his intellects.

---

* Ollivier, tom. ii. p. 452.

At the post mortem, we found rather extensive pneumonia and pleuritis of the right side; there existed at the same time considerable sanguineous congestion in all the meningo-spinal veins, which were manifestly dilated. The nervous cords were enveloped in a collection of veins very much gorged with blood, which evidently compressed each spinal nerve at its exit from the spine, a circumstance which perfectly explained the phenomena observed during life. There was a little serum effused. The spinal marrow and its membranes presented no other trace of alteration, no more than the brain and its membranes.

This sanguineous congestion of the spinal venous system was so much the more remarkable, as in another patient whom I opened soon after, and who had died of encephalitis, accompanied by a spinal meningitis, which was characterised by a puriform exudation between the pia mater and arachnoid of the spine, the spinal veins did not present a similar engorgement, and yet the afflux of the fluids which must have existed during the inflammatory process, could only cause a congestion similar to what we have just been examining. It appears evident that it alone sufficed to produce the general stupor with which the trunk and extremities had been struck, for the accumulation of fluid was not sufficiently abundant to warrant us in attributing to it the phenomena observed during life. They depended then solely on the vascular congestion, and in a great measure on that which compressed the nerves at their exit from the intervertebral foramina.

Case [*] 57.—*Abuse of venery—Incomplete paralysis of motion of the upper and lower extremities, without lesion of the sensibility—Slight pains in the loins—Absence of cerebral symptoms—Gradual disappearance of the paralysis from above downwards—Cure at the end of three months.*

M***, thirty-eight years of age, of a sanguine temperament and lively disposition, had always led, up to the day of his illness, an active and laborious life. He indulged in spirituous drink, and in venereal pleasures in the erect posture. The debility gradually produced by this indulgence obliged him to put some restraint on himself. After an act of this kind, he experienced a pain in the loins, and a trembling of the lower extremities.

For the last two months, there was a general debility of the legs, and wandering pains, which did not, however, prevent him from following the same kind of life; when, on the 15th of April, after a violent fit of anger, he felt an almost universal trembling of the muscles. The 16th, after more labour than usual, numbness in the right hand. The 17th, he travelled some miles on horseback (the numbness still continuing), on which occasion he drank some spirituous liquors; pains in the loins; a sensation of breaking of all the limbs. On the 18th, the family physician observed a difficulty in his movements, some unsteadiness in his walk; he felt acute pains in all the articulations, a sense of formication in the hands, no alteration of the features, no headach, respiration natural. 19th, face flushed, slight pain of head, same state of extremities, pulse hard and accelerated. (Bleeding from the arm, baths, diluent drinks.)

After some days, MM. Dutrochet and Gendron were called into consultation, and found the patient sitting in a chair in the following state:—Upper extremities inert, hanging over the thighs, sensible to the touch; fingers move imperceptibly; to raise the shoulder, and carry the hand to the forehead, the fore-arm slowly describes an arc of a circle in its direction toward the chest, and the head inclines in order to meet the hand, which scarcely touches the cervical region; the left less capable of performing this movement than the right; both these limbs fall again by their own weight. The patient cannot grasp anything in his hands. He raises the legs from six to eight inches from the ground, and they soon fall again; toes immoveable; no pains in the extremities; merely a general numbness; and it is only after trying to perform some movement that he experiences a sense of formication. The movements of the muscles of the head and neck intact; those of the back and loins abolished, so that the patient cannot rest on his seat; the posterior part of the trunk, all across the spine, not

[*] Tom. ii. p. 464.

affected with any pain; a slight sensation of heat only in the dorsal region (twenty leeches applied at this part); skin in the natural state, pulse slow, tongue free from redness; respiration free; pulsation of the heart conformable to the pulse; some slight colicky pains in the abdomen; constipation; function of the bladder well performed; urine a little red.

An antiphlogistic treatment was prescribed without any other effect than that of reducing the number of the pulse. After the application of the leeches, the patient was deprived suddenly of the little motion which had existed up to that time. The idea that an effusion might be the cause of this occurrence, made the medical attendants apply blisters along the spine, and have recourse to the internal use of tonics. By degrees the pulse returned to eighty.

After this treatment was followed up for fifteen days, the power of motion sensibly returned; four blisters had been applied in succession. The patient objected to the application of any more of them. Obstinate constipation existed from the commencement of the disease; this was remedied by purgative lavements. M. Bretonneau, who had been called in, ascertained instantly the existence of an almost complete muscular paralysis, with preservation of the sensibility. He recommended the use of moxas, but the patient refused. Nux vomica, given in gradually increased doses as far as thirty-six grains a day, merely produced formication in the extremities, and slight agitation for some nights. The patient complained occasionally of acute pains in the heels; at last, annoyed at seeing no change in his state, he determined on taking no more medicine; only some dry frictions were occasionally made on the spine and the extremities; by degrees the movements of the upper extremities became more sensible; the patient was able to use his hands in eating; but his legs could not support him; he could rise and keep sitting without being fatigued; but when he wished to walk, he could with difficulty proceed three steps, and that in a very embarrassed manner by the help of crutches. After about three months' illness his health was restored, and the paralysis entirely disappeared.

It would be difficult to admit, from the group of symptoms observed in this patient, that the cause of the paralysis consisted in an inflammation of the spinal marrow and its membranes. With the exception of the pain in the lumbar region, where no doubt the sanguineous congestion at the time of coition more particularly occurred, no phenomenon is observed which could well be connected with a well-marked irritation. Everything, on the contrary, announces a cause which secondarily produced the torpor, and not the excitation of the spinal nervous centre, and this cause seems to me to have consisted in a sanguineous congestion, the frequent recurrences of which influenced the exhalation of the vertebral liquid, whose quantity progressively increased; however the numbness which appeared in the right upper extremity after violent efforts, and when the weakness of the lower extremities had already manifested itself, might seem to prove that the afflux of blood did not take place in a uniform manner in all the points of the spinal vascular system. It is very probable also, that the position in which this man habitually indulged in coition, and the general contraction of the muscles which must result from it, could not but favour the spinal congestion.

We should also remark the extraordinary weakness of the circulation after the use of an antiphlogistic treatment, a circumstance which equally tends to prove that there was not there an active concentration of the fluids as in inflammation. Perhaps also the enervating action of the venereal excesses had weakened the influence which the spinal marrow exerts over the circulating apparatus, and this cause may have added to the effects of the compression made on the nervous centre. Was it from this same circumstance, or rather because the seat of the alteration was not in the tissue itself of the cord, that the nux vomica did not produce any result?

But how can the paralysis of motion take place without an alteration of the sensibility, admitting these phenomena to be the result of a greater or less sanguineous congestion, and of the accumulation of a greater quantity of liquid in the vertebral canal. If we duly consider this morbid phenomenon, we shall find it hard to conceive that motion or sensation may be then separately abolished, since the spinal marrow should be equally compressed in all the points of its surface. Yet when we reflect on its position in the spinal canal, we see at once that its anterior part is kept almost immediately applied against the posterior surface of the bodies of the vertebræ by the spinal roots, whilst the posterior portion is removed five or six lines from the corresponding surface of the canal. The result of this arrangement is, that if a fluid interposes itself around the spinal marrow, it exerts stronger compression on its anterior part in consequence of being kept in closer approximation to the resisting part of its canal. On the other hand, if there be at the same time a congestion in the vessels of the pia mater which traverse the surface of the marrow, the effect of dilatation by these vessels, acting entirely on the anterior surface of the nervous cord, which can allow between it and the spine but a small interval, the anterior fasciculi are more particularly compressed; thence it is that motion is more particularly affected by paralysis.

I know that this explanation, rational though it may appear, would require to be supported by the results of examination of the dead body; but it is difficult that such phenomena, which can exist only under the influence of life, should continue after death. This remark is especially applicable to the numerous lesions of the nervous system, and it is with good reason M. Lallemand[*] has said, "that the pathological changes of the brain, the spinal marrow, and of their membranes, are more difficult to be appreciated than those of other organs, because that, independently of the particular precautions which their examination requires, a violent inflammation, producing death more rapidly, leaves in them traces much less evident; because a slight inflammation may more easily produce serious symptoms; because that, being the termination of all the sensations, this nervous centre is more susceptible than any other of being sympathetically irritated, and it is to this difficulty of finding after death the traces of those affections which were seated there during life that we must principally attribute the backward state of our knowledge regarding these diseases."——The following fact, communicated by M. Dance, will prove the justice of M. Lallemand's observations :—

Case 58[†].—*Labour natural—Suppression of the lochia on the third day—Convalescence without any return of the discharge. At the end of a month formication in the hand and foot of the left side, then of the right side—An almost sudden paralysis of the motions of the four extremities—Preservation of the sensibility—No lesion of the intellectual functions—Increasing dyspnœa—Death by asphyxia the second day—Congestion, though but little marked, of the spinal vessels—Brain and spinal marrow intact.*

A woman, thirty-one years of age, a servant, of a strong constitution, was conveyed on the 2d of April, 1825, to the Hôtel Dieu in a state of general paralysis ; intelligence not disturbed. She had lain in a month before : pregnancy and labour very favourable. The third day the milk fever set in, breasts swelled considerably, lochia entirely suppressed, and did not reappear. This did not seem to influence her health : she left the Maternité on the 12th day. At the end of eight days she resumed her duties as a servant ; when, on the 1st April, after having been apparently in good health up to that period, she felt suddenly a sense of creeping, at first at the ends of the fingers of the left hand, then at the extremity of the toes of the same side, and half an hour after, the same formication, first at the ends of the fingers of the right hand, then the right toes.

Notwithstanding this disagreeable sensation, she continued to walk about till three o'clock in the afternoon, when she was obliged to sit down, her limbs being no longer able to support her. She remained in this state, sitting in a chair, till seven o'clock, and her fatigue increasing, she was unable to gain the bed, and it was necessary to carry her to it. She had some sleep in the night; formication still annoying her. On the 2nd, following state : lies on her back, face somewhat flushed ; countenance not expressive of suffering ; intelligence perfect ; not subject to headachs; had a slight one the evening before; formication at the ends of the fingers and toes ; unable to raise her limbs, which, when raised, fall back on the back ; this paralysis more complete on the left than the right. The limbs not rigid, but flexible ; feet colder than the rest of the body ; patient feels this.

Sensibility not diminished in any part of the body ; the slightest contact of the limbs is perceived ; fingers half-flexed, and she is unable to extend them. Respiration performed with a sort of effort; evidently cannot dilate her chest sufficiently, which resounds in every part on percussion ; but auscultation detects a slight râle ; a gargouillement in the bronchi, evidently produced by the mucus collected in it, and which the patient is unable to expectorate, the movements necessary thereto being impossible (Up to this period her cough had been always easy.) Tongue moist and pale ; slight colicky pains for the last hour ; no alvine dejection since the commencement of the attack ; she passed urine, however, voluntarily during the day. Temperature of skin natural ; pulse rather weak and slow than otherwise ; appetite ; no other uneasiness any where except the sense of formication. No pain along the spine, the conformation of which is regular, on which there is no pain felt on pressure ; movements of the head on the neck free. (Bleeding from the arm.) At the end of an hour respiration more difficult ; chest dilates but imperfectly ; bronchial gargouillement more marked. At eight o'clock in the evening dyspnœa increased ; marked contractions of the scalen muscles at each inspiration ; expectoration still impossible. (Sinapisms to the feet.) At ten o'clock suffocation somewhat less ; efforts to cough still incomplete. No sleep that night. The following morning, the 3rd of March, the paralysis increased in the right hand ; sensibility still ; formication still confined to the fingers and toes ; lancinating pain occasionally in the heel and big toes of the right side ; respiration a little more free ; disappearance of the mucous gargouillement, and of the ineffectual effort at coughing obesrved the preceding day ; passes urine voluntarily ; constipation continues ; face less flushed, and is covered with blackish veins, particularly at the lips and cheeks ; temperature of skin the same ; pulse quicker and stronger, but regular, being one hundred ; deglutition more difficult. In the evening the difficulty of the respiration still more increased ; inspirations short and painful ; face violet colour ; skin covered with sweat ; pulse from 120 to 130 ; beating of the heart strong and tumultuous. At eight o'clock at night she was again bled ; dyspnœa increasing, cold and general sweats ; patient complains only of suffocation. At nine o'clock the circulation became slower, pulse insensible, and the patient expired at a quarter past nine.

---

[*] Letter 1, sur l'Encephale.

[†] Vol. ii., p. 471.

Post mortem. Cavities of the cranium and spine were opened with the utmost care; marked engorgement of the vessels external to the cerebral dura mater, and of those coming from the diploe, particularly along the sutures, which gave to this membrane a violet tint. Nothing remarkable in the brain, except that on the surface of each section of it there were some red points, indicating a slight engorgement of this viscus.

In the spine the cellular tissue, external to the spinal dura mater, was slightly infiltrated with blood, particularly inferiorly. Spinal marrow, minutely examined, presented nothing unusual; its consistence rather increased. Lungs natural. The cavity of the uterus lined with a reddish mucus.

The different circumstances of this interesting case cease to present so much singularity, if considered with the preceding and the following cases. We shall see that vertebral sanguineous congestions in women, are more frequently caused by the suppression of a customary evacuation, and it is so much the more probable that here the sudden suspension of the lochia were the primary though remote cause of all the symptoms so rapidly followed by death; that M. Dance assured me, that he has frequently observed, at the Hôtel Dieu, the same phenomena in lying-in-women, after such a suppression, or that of the milk, or the cutaneous transpiration, &c. Let us now add a remark, which may explain the sudden invasion of the paralysis: it is this, that it was precisely a month after the suppression of the lochia, that the first symptoms were observed to come on, a time when the periodical movement must exist, under whose influence the menses usually re-appeared, a coincidence which may account for the rapidity of the spinal congestion.

But, it will be said, this concentration of blood in the spinal vascular system was not accompanied with any dorsal pain, and the progress of the paralysis, which commenced in the left hand, then attacked the left foot, and from thence extended to the same parts of the opposite side, is no longer analogous to that, the symptoms of which have been described by me already. These differences do exist, I admit; but was not this rapid accumulation of the fluids announced by the state of the pulse, which ceased to be depressed as soon as ever the bleeding diminished the first symptoms of suffocation, and which became rapid and frequent at the same time that the phenomena of active congestion in the spinal vessels increased in intensity? This violent fever could not be the result of the alteration of any organ, as they were all sound. With respect to the extraordinary progress of the paralysis, it does not prove that this symptom did not depend on a simple vascular congestion; for it is quite sufficient to consider for a moment the spinal circulation in general, in order to see that it may be the seat of partial congestions, more or less circumscribed, before the sanguineous congestion becomes general. Thus we may explain the numbness of one separate limb, then of another, &c.

It cannot be admitted that the paralysis was produced in this patient by the cerebral congestion, which was very slight, as may be inferred from the state of the intellectual faculties, which remained intact up to the last moment. In fine, the increasing dyspnœa, caused at first by the restraint in the functions of the spinal cord, became in its turn one of the causes which concurred in embarrassing still more the action of this nervous centre. Here an objection may be raised, and apparently a very strong one, against the different explanations I am after giving; it is, that there were found on the dead body but slight traces of the sanguineous congestion to which I attribute all the symptoms which presented themselves. No doubt, these traces were slight; but is it astonishing that a sanguineous congestion so rapid, and which caused death in so short a space of time, did not leave behind it more vestiges of its existence? Ought we to be surprised that a phenomenon, merely vital, should disappear with the cessation of vitality? However, the sanguineous infiltration of the cellular tissue external to the dura mater, combined with the symptoms presented by the patient, sufficiently attests it. The results of the autopsy above recorded could not be objected to this opinion; for, in this case, the patient had been affected for a long time with paralysis of motion in the trunk and limbs, and the repeated sanguineous congestions had insensibly dilated the spinal vessels, which contributed to favour the stagnation of the blood in their interior after the individual died. Here, on the contrary, the invasion of the paralysis was sudden, and its duration very short; besides, death having been the result of a real asphyxia, the blood remained liquid, a circumstance which must again have contributed to facilitate the return of this liquid towards the central parts of the circulatory apparatus in the last struggle.

The influence of the venous circulation on the spinal marrow has been noticed by P. Frank*, who has made very just and well-founded reflections on this subject. The considerable quantity of blood found frequently in the veins and sinuses of the spine, the distribution of these vessels, in which the blood circulates against its own gravity, and without being aided by the action of valves, whilst its course is free and easy in the thorax and abdomen, are so many circumstances which fixed his attention. Is it, then, astonishing, he says, that the suppression of an habitual flux, as the menses, or hemorrhoids, is so often accompanied with dorsal and lumbar pains more or less severe, and that we observe the same phenomenon towards the latter period of pregnancy, in certain chronic affections of the abdomen, in inflammation of the uterus, in its prolapsus, eversion, or in schirrus of the same organ, and in certain spasmodic colics? Is it not, again, to the congestion and distension of the vertebral sinuses and the vertebral veins that we must attribute certain pains of the back and lower extremities, certain sciatic neuralgiæ, certain species of lameness, divers tremors and convulsive movements, stupor or paralysis of these extremities, as well as several epileptic and tetanic phenomena?

---

* Delect. Opuscul., tom. xi.; de Vert. Column., &c., an. 1792.

Such is the cause of those incomplete and transient paralyses, which appear in some persons affected with bleeding hemorrhoids, a little before their appearance, and noticed by Hippocrates[*]. Aretæus[†] observed the same phenomena after the suppression of a periodical hematuria. F. Hoffman[‡] saw the same thing after parturition. Van Swieten[§] has remarked that vomiting produced similar effects. Frank saw a paralysis of both arms come on after a violent movement, and go off spontaneously after some hours. Spinal sanguineous congestions also take place, according to this last author, at the time of the shivering of fever, or consecutively to an acute irritation of the intestines, considerable engorgement of the viscera, a contraction of the aorta, or after an aneurism of this vessel; they are then sometimes accompanied by pain in the dorsal and lumbar regions. I am almost certain, adds Frank, that the effects of respiration on the spinal marrow are the same as on the brain, and that the vertebral veins and sinuses must experience the same swelling, the same dilatation; whence it follows, that there exists in the spinal canal, as in the cranium, a momentary plethora, when the lungs are under a more or less prolonged restraint in their action.

We see how just the different reflections of Frank are, and how entirely they accord with the preceding observations. This last remark, relative to the influence of respiration, is confirmed, by modern physiological experiments, and by numerous pathological facts. With regard to the spinal congestions produced at the time of the shivering in fever, I doubt not but they are also the cause of several other phenomena commonly observed on the approach of fever, as the heat and pain of back, the sensation of fatigue, the pains and transient numbness of the limbs, &c. phenomena which are so much the greater, if the sanguineous congestion exist at the same time in the tissue of the spinal marrow itself.

J. Frank[‖] has also made some remarks regarding the influence of sanguineous congestions on the spinal marrow and its functions. He shows that "the arterial and venous circulation of the spine and spinal marrow must undergo numerous modifications, in the case where there exist any chronic engorgements of the abdominal viscera, or when the uterus is distended by the product of conception, or when repeated exertions act on the respiration; on the one hand, because each intercostal and lumbar branch of the aorta sends into the vertebral canal a branch which anastomoses with the spinal arteries, which are sometimes found dilated, and as it were aneurismatic[¶]; on the other hand, as many veins of the vertebral canal open into the intercostals, which terminate through the vena azygos in the vena cava superior, it is easily conceived that all the alterations of the lungs, or of the right cavities of the heart, which may cause any obstacle to the circulation, must produce in the spine a venous plethora. In this way may be explained the affections of the spinal marrow which supervene on a suppression of the menses, of an hemorrhoidal flux, or of any other habitual hemorrhage."

Ludwig[**], a considerable time back, expressed ideas similar to those of P. and J. Frank; this is how he expresses himself on this subject in the chapter entitled *Tractatus de Doloribus ad Spinam Dorsi*: "The very acute dorsal pains which so often exist in severe intestinal colics, depend on the affection of the lumbar portion of the spinal marrow, which happens through its communication with the nerves of the great sympathetic. This organ is again the seat of those pains which seem to ascend along the back in certain cases of hemorrhoids, in schirrus and cancer of the rectum. The sensation of tension in the back and loins, complained of by females labouring under dysmenorrhæa, as also in certain cases of pregnancy, results also, according to the same author, from a similar irritation of the spinal marrow. In a word, he thinks (ibid, p. 730) that at the onset of fevers, the wandering pains in the limbs, and in the dorsal region, depend on the difficulty of the circulation of the blood in the vessels of the pia mater, brain, and spinal marrow.

These different quotations are sufficient to prove that the attention of observers was already fixed on the phenomena which result more or less directly from spinal sanguineous congestions, and on the causes which may concur in producing those congestions.

I have already remarked that the most ordinary effect of venous congestions in general is to produce, as the retardation or suspension of the course of the blood in the veins of a part, a dropsy more or less circumscribed, according as the obstacle acts on one or more points of the venous circulation. This pathological phenomenon, of which numerous instances are found in the valuable work of Morgagni, and which the still more recent observations of M. Bouillaud have further confirmed, would of itself suffice, if cases and observations did not prove it, to demonstrate, that when, by any cause whatever, the spinal venous blood is retarded in its course, or this portion of the vascular system becomes the centre of an active but moderate and frequently repeated fluxion, the quantity of the vertebral liquid increases, and must produce a greater or less compression on the spinal marrow.

---

[*] Coac. Prænot., No. 346.

[†] De Morb. Diuturn., c. 3.

[†] Med. Rat. Syst., part iv. p. m. 41.

[§] Comment., tom. iii., p. 266.

[‖] Praxeos Med. Univ. Præcept., tom. vi. p. 26. Torino, 1822.

[¶] Malacarne, Encefalotomia Nuova Univ. Torino, 1780.

[**] Advers. Med. Prac., tom. i. p 711. Leipsic, 1770.

I have accordingly often observed with a well marked sanguineous congestion in the veins of the spinal marrow and its membranes, a greater quantity of serum in the cavity of the latter. Several times have I found considerable spinal effusions in old men who died after an attack of apoplexy; in some the serum was bloody, which resulted from the escape of a portion of the blood, which had been effused into the cranial cavity. The spinal serous collection, which is situate between the pia mater and the inner reflexion of the arachnoid, is always sufficiently abundant in the dead body, since it distends all the meningeal sheath during life. The presence of an abundant liquid, which usually fills all the space between the spinal marrow and its membranes, was observed and described long since by Cotunnius*, the accuracy of whose observations (which, by the way, appeared to have been forgotten) were confirmed by the curious and recent researches of Magendie, who was the first to remark, that this liquid is truly sub-arachnoid, that is, that it is contained between the pia mater and the internal reflexion of the arachnoid. With respect to the communication of this liquid with that of the brain, it takes place by a small aperture described by this eminent physiologist †, and which is situated on a level with the termination of the fourth ventricle. It is through it that the liquid may flow from the cerebral ventricles into the spinal canal, and reciprocally from the canal into the ventricles.

I thought it right to insist here, on all the particularities relative to the vertebral liquid, as well to establish its constant presence as its quantity. It is then, evident, from the observations of Cotunnius and Magendie, and from those which I have made several times on the dead body, that in the normal state, the spinal marrow is surrounded by a copious fluid, which distends the spinal membranes. Now, it is easy to conceive, that a slight increase in the quantity of this liquid, or that a vascular congestion to any amount may be sufficient to produce on the spinal nervous cord, a compression, which instantly produces a numbness, then an incomplete paralysis of the extremities. Besides, do we not know, that a slight cause is sufficient to disturb the functions of an organ so delicate, and with which all the nerves of sensation and motion communicate? Thus, then, the presence of this liquid, necessary to the performance of the functions of the spinal marrow, as is proved by the results of its removal, at the same time renders this organ more susceptible of feeling the influence of the slightest pressure. The rapidity with which it is re-produced, evidently proves its importance. That this fluid fills the entire spinal canal during life, has also been proved beyond a doubt; and hence the difficulty of appreciating, in the dead body, whether the quantity of serum found is the result of dropsy, or of the normal state. In general, irritation of the spinal meninges, whether immediate or consecutive to an alteration of the bones, contributes equally to increase this exhalation ‡. On the other hand, there have been occasionally observed during life, phenomena which announced a greater or less irritation of the marrow and its membranes, in persons whose vertebral canal, being opened after death, seemed to contain a quantity of serum more abundant than natural §.

The free communication of the cranial with the vertebral liquid, very well explains how spinal dropsy may supervene after birth consecutively to a hydrocephalus. Morgagni gives a very remarkable case of this, recorded by Genga ||. Morgagni reports several cases of serous apoplexy with effusion into the spinal canal, which effusion he considers to arise from the cranial cavity. However, it also happens that hydrocephalus and serous effusion of the cranium do not give rise to a more abundant quantity of serum in the canal of the spine; as I have proved frequently in dissecting children who died of hydrocephalus. This phenomenon, apparently contradictory to what has been previously stated, may be readily understood by observing what takes place sometimes in cerebral dropsy. The liquid, in dilating the cerebral ventricles, makes, posteriorly, on the aqueduct of Sylvius, a pressure sufficient to close up this canal. Henceforward then, no more liquid can flow into the vertebral canal. This takes place principally in the case where the fluid pushes back posteriorly the cul de sac formed by the pia mater, which Bichat described as a canal of the arachnoid.

If we may judge from what has been now stated of the difficulty of finding, on the dead body, traces of certain sanguineous congestions of the marrow and its membranes which have existed

---

[*] De Ischiade Nervosâ Comment., in Sandifort, Thesaur. Dissert., tom. ii. p. 411, et seq. 1764.

[†] Journal de Phys. Exp. Jan. 1826.

[‡] See Morgagni de Sed. et Caus., Epist. x. sect. 13

[§] See Bonnet. Sepulchr. tom i. p. 305.

[||] De Sed. et Caus., epist. xii. sect. 9.

during life, we also see that it is most frequently impossible to appreciate whether the quantity of the liquid is really increased so as to constitute a real hydrorachis, or spinal dropsy, since the membranous canal of the spinal marrow is entirely filled with serum during life, and the accumulation of it is more considerable in old age, in consequence of the atrophy of the nervous centres, and a slight increase in its quantity is thus sufficient to produce stupor or numbness of the trunk and extremities. Be that as it may, it appears to me certain, that venous congestions and serous effusion, whether existing separately or simultaneously, are, under certain circumstances, the real cause of nervous affections, independent of any morbid change in the tissue of the spinal marrow, of its nerves, or its membranes. Spinal meningitis may, no doubt, give rise to a more copious exhalation of serum, but there is then observed a regular train of specific symptoms; and though this inflammation may be, in some measure, nothing but the same phenomenon, differing only in the rapidity of its progress, I thought it right to examine it separately.

Case 62.—A soldier, of an infantry regiment of the line, twenty-six years of age, received a thrust of a foil in the left temporal region, and instantly fell. When brought to the hospital he was in a profound stupor. Respiration difficult and slow; at each expiration a frothy saliva escaped from his mouth; convulsive movements agitated his limbs. He was bled without any effect. Respiration became slower, and he died three hours after the accident.

Post mortem. A rounded and even perforation, about the size of a line and half in every direction, at the inferior and anterior angle of the left parietal bone, directly in the furrow which lodges the meningeal artery. Effusion of black blood, a little coagulated, over the entire surface of the lobes of the brain, as also at the base of the skull, where it was more abundant. The sinuses of the dura mater were filled with black blood. The foil, in entering the furrow of the parietal bone, had pierced the meningeal vein, without at all touching the meningeal artery. The substance of the brain was not perceptibly injected; the instrument had penetrated about an inch into the cerebral substance. It was not observed that it entered the ventricle of this side, the cavity of which, as also that of the left ventricle, were, however, filled with fluid black blood.

Spine.—On allowing the neck of the body to hang over the edge of the table, after removing the brain, I remarked that there flowed from the spinal canal, a great quantity of black blood, very fluid, and still warm. After opening the spine I found the cavity of the spinal membranes still filled with this fluid, though a great abundance of it had escaped from it before opening it. A frothy red blood raised the inner reflexion of the arachnoid, which was united but loosely to the pia mater by cellular bands. The medullary portion of the medulla oblongata was white, without any perceptible injection, and of ordinary consistence.

It would be wrong, no doubt, to draw from this case any arguments to illustrate the symptomatology of sanguineous effusion into the spinal membranes, because the wound of the brain, and the accumulation of blood in the ventricles, and at the surface of this organ, must have contributed to produce the symptoms which preceded death. However, I am inclined to think, from the recent experiments of Magendie, that the blood which flowed into the spinal sheath may have concurred in determining the general convulsions observed. It was effused, as has been seen, partly between the pia mater and arachnoid, and partly into the very cavity of this latter membrane, a circumstance which is explained naturally by the nature of the wound. May not this fluid, differing from that which naturally fills the membranous canal of the spine, have acted as an irritating body on the spinal marrow and its nerves?. thence the convulsive movements of the limbs.

Case 64.*—*Spontaneous hemorrhage and rupture of the cephalic bulb of the spinal marrow and of the annular protuberance—Convulsive contractions of the limbs—Stertorous respiration—Death at the end of five hours.*

M. D., a middle-sized man, large head, short neck, broad shoulders, and large abdomen, very muscular, being at work in the open air, complained suddenly of a ringing in the ears; some minutes after he screamed from acute pain; he arose, commenced to run, as if to escape the danger which threatened him. After having run for a short distance, he fell, and presented the following symptoms:—

Complete loss of consciousness; face pale; immobility of the pupil, which is not dilated, and is of the same diameter on both sides; eye-lids at first half closed, and completely approximated (the upper lid of the right side fell a little subsequently to the left); immobility of the globe of the eye; mouth half open; tongue covered with arterial blood, and occasionally protruded, but without permanent deviation of its point; lips covered with frothy saliva; no perceptible tension of the mouth.

Respiratory movements frequent, irregular, accompanied occasionally with *stertor*, and almost continually with a sound similar to that which is frequent in attacks of epilepsy. The alæ nasi contract convulsively with the muscles of respiration. Twice there was violent sneezing, during which the patient, who lay on his back, bent forward. The limbs in a state of rigidity, which is easily overcome. This contraction, besides, is not entirely permanent; it ceases for some moments, and then the limbs are pliant enough, particularly the arm of the right side; the contraction then manifested itself suddenly, and lasted some time. In a word, these contractions seemed to hold a medium between tonic and clonic convulsions, though they approached nearer to the latter. The contraction of the muscles of the neck was not strong enough to prevent the head, in obedience to the laws of gravity, from inclining to the right or to the left, forwards or backwards, according to the position given to the patient. With respect to the sensibility, it was hard to determine whether it was abolished or not. There was observed a convulsive movement of the right arm when its skin was pinched, and a similar movement when the integuments were cut in bleeding him. Were these movements owing to the pain experienced by the patient? Some contractions of the right arm during the bleeding manifestly increased the force and size of the stream of blood.

---

* Ollivier, tom. ii. p. 511.

In considering the almost convulsive contractions of the limbs, during which the arms were rotated inwards, and the strongly flexed state of the thumbs, and the froth with which the mouth was covered, one would have thought it a fit of epilepsy; but the patient never presented any symptom of this disease. He died five hours after the first appearance of the disease. He was not observed for the last two hours. On examining the body, the central protuberance was found changed into a pouch filled with blood, partly coagulated, and mixed with some fragments of nervous substance, softened and coloured by this liquid. This effusion made its way laterally by a small opening; but the principal rupture existed in the fourth ventricle, the floor of which, divided transversely, had given issue to the blood which distended the parietes of this ventricle.

It is to be regretted that this patient was not watched closely up to the time he died, because the general paralysis which must have preceded it might have been ascertained. It cannot be doubted but that this spontaneous hemorrhage produced the cessation of motion and sensibility, when it occasioned the laceration of the entire substance of the spinal bulb. But if this case be incomplete in this respect, it is still very important, in its establishing the diagnosis of the effusion from its commencement in this portion of the cerebro-spinal system. These symptoms are truly characteristic, and present no analogy to those which are peculiar to other cerebral hemorrhages. I have since had several opportunities of observing this apoplexy at the moment of the attack, and I have always remarked convulsive contractions in the upper extremities, with alternating movements of rotation inwards. The opening of the mouth underwent no change. These spasmodic convulsions, observed at the commencement of the attacks of apoplexy in general, seem to me to depend on the irritation which the blood produces on the extremities of the torn medullary fibres, with which it remains in contact, and on which it must act as an irritant.

With respect to the general paralysis of the upper and lower extremities, it has been uniformly observed, in all cases where, at the post mortem, there has been found an apoplectic cavity in the substance of the protuberance and peduncles. M. Serres* saw several instances of this hemorrhage, and always, he says, complete immobility of the trunk and upper and lower extremities took place at the same moment when the apoplectic attack showed itself. Thus, I hesitate not to assert, that paralysis existed during the last hours before the death of the person who is the subject of the preceding case.

In the first moments we saw that the respiratory movements were executed freely enough, and were even voluntary, since the patient sneezed twice, in doing which he flexed the trunk forward, and we know that this movement of respiration requires an effort of expulsion, which is impossible when the action of the respiratory nerves is abolished. It is probable that the hemorrhage, confined to the protuberance, and to some fibres of the corresponding portion of the peduncles, did but lacerate them progressively, whilst it extended itself towards the cephalic bulb, a point where the rupture was soon followed by death. The manifest movements made by the patient, when pinched, and when his skin was cut in venesection, show that, at the commencement, the sensibility was not extinguished; and this circumstance is precisely conformable to the seat of the hemorrhage, which at first occupied, as we have seen, only the anterior fasciculi of the spinal marrow.

Death is so much the more rapid, according as the hemorrhage is more abundant, and the more it involves the cephalic bulb of the spinal marrow. The respiration becomes more difficult, and stertorous also; it becomes progressively retarded, and the patient dies of real asphyxia; sometimes, too, the lungs are found emphysematous. M. Serres quotes two facts which prove that life may still continue a long time, notwithstanding the paralysis of the upper and lower extremities, consecutive on hemorrhage of the protuberance. He met in two subjects, even in the midst of the pons Varolii, a cavity containing a yellowish fluid: there was an induration of the surrounding cerebral substance. The numerous excoriations on the posterior parts of the body in both subjects, evident marks of a long-continued lying on those parts, the atrophy of the upper and lower extremities, equal on both sides, were evident proofs of a paralysis of long standing, consecutive on the effusion into the protuberance, which was partly absorbed[*].

---

* Annuaire des Hospitaux, p. 331, in 4to, 1819.

It is then particularly when the hemorrhage interrupts the continuity of the fibres of the peduncles, that effusion at the protuberance gives rise to paralysis of the four extremities. But if the hemorrhage be inconsiderable, and the apoplectic cavity very much circumscribed and situated in the median line, the fibres of the anterior cords are but little altered, the general paralysis but little marked, and the individuals may live a longer time.

The effusion which is seated in the annular protuberance, is situated therefore above the interlacement of the fibres of the pyramids: now if these fibres are completely divided only on one side, we observe exactly the same phenomena as those which result from the hemorrhage which takes place in the parts of the encephalon which preside over the movements of the leg and arm; in a word, hemiplegia supervenes. The following example will furnish the proof of this pathological fact:—

Case 65[†].—*Hemorrhage circumscribed to the left half of the protuberance, involving the fibres of the left peduncle—Hemiplegia of the right side—Death at the end of two days, after a cerebral congestion—Cancer of the heart.*

Isidore Magriz, forty-six years old, entered the hospital Salpétrière for a *complete hemiplegia of the right side*, which existed for several years. There was nothing particular in her state until some time after, when she suddenly felt a dizziness with loss of consciousness. Face injected, pulse strong, &c.; in a word, all the symptoms of strong cerebral congestion manifested themselves. In spite of every means being resorted to, she died two days after the appearance of the first symptoms.

Post mortem. Outward appearance.—Countenance very much injected, and of a violet hue, as also the conjunctiva, and eye-lids, which were swollen.

Cranium.—Much black blood between the arachnoid and pia mater; the grey substance of the circumvolutions were of a deep colour; white substance injected, and presented some slight marbling; ventricles contained a considerable quantity of serum. On cutting the annular protuberance layer by layer, there were found in the midst of its left half the evident traces of an effusion which had been absorbed: a circumscribed cavity, filled with a filamentous tissue infiltrated with yellowish serum, and capable of containing an ordinary sized kidney bean: its greater diameter, of about five lines, was situated almost transversely, and a little obliquely from within outwards. This cavity of an old effusion partly absorbed, evidently interrupted the continuity of a great part of the fibres of the left peduncle.

Thorax.—Lungs gorged with black, fluid blood; pleuræ contained several ounces of serum. The muscular fibres of the parietes of the right ventricle of the heart were evidently changed into a yellowish white, encephaloid tissue.

Abdomen.—Mucous membrane of the stomach thickened and of a brown red. Liver and spleen gorged with blood.

This case, interesting in more respects than one, proves then at once that the hemorrhage which takes place in a part of the annular protuberance, may produce the same results as that which takes place in the optic thalami and corpora striata of one side of the encephalon, and that similar effusions, when they are not very extensive, are capable of absorption, just as those of the brain. Nothing, indeed, can distinguish this hemorrhage from the cerebral apoplexy which gives rise to hemiplegia.

The paralysis which results from an effusion into the cerebral protuberance is always limited to motion, because the rupture involves only the anterior fasciculi of the spinal marrow. It is susceptible of cure, as well as that which depends on hemorrhage which takes place in the other parts of the encephalon, and this favourable termination is effected by the same mechanism. The case I have now detailed presents an example of the progressive absorption of the effused blood, and proves that the primitive effects of the effusion still continue when the continuity of the medullary fibres has been interfered with. I shall, on this subject, make one remark, which is equally applicable to cerebral hemorrhage: it is that paralysis may disappear in cases where the blood resulting from the hemorrhage is effused between the medullary fibres, which it only separates, and which it compresses without destroying them; whilst, if their rupture takes place, the cure is never complete, and whatever means be employed, the effects still continue. I am certain that to this cause alone, already pointed out by M. Foville, and not to a cicatrisation of the torn medullary fibres, we should attribute the disappearance of the hemiplegia in certain individuals. It is easy to conceive, in fact, that the paralysis resulting from the compression made by the effused blood on the nervous fibres in separating them, will diminish according as this compression ceases in consequence of the absorption of the blood and the contracting of the apoplectic cavity. The hemorrhages which tear more or less rapidly the tissue of the spinal marrow, present then the same phenomena as those which burst into the lobes of the cerebrum and cerebellum. The alteration and the tissue being of the same nature, the effects must necessarily bear a resemblance : I abstract from the symptoms, which differ in more than one respect in these different cases. An active and sudden congestion is followed by hemorrhage, by effusion of blood in variable quantity, and by a paralysis more or less prompt; but when the sanguineous congestion takes place less rapidly, when it is more continued, the nervous tissue undergoes an alteration intermediate between inflammation and hemorrhage properly so called ; this continual afflux of fluids brings on by degrees the softening of the medullary substance ; the blood infiltrates and unites itself with it in some measure, and if the congestion continues, the nervous tissue is changed into a reddish, diffluent, soft consistence, mixed sometimes with liquid and pure blood. In this case the paralysis developes itself but gradually, and this disorganisation of the spinal marrow, prepared in some measure by repeated and constant fluxions, may sometimes rapidly destroy this nervous centre to a considerable extent.

---

[*] Loc. Cit., p. 355.

[†] Olliv. p. 525.

THIRD ORDER.

OBSERVATIONS ON SOFTENING OF THE CEREBRAL HEMISPHERES.

The excellent works published in later times, on softening of the brain, by MM. Rostan, Lallemand, Bouillaud, and others, are far, in my opinion, from having exhausted this subject. Science as yet possesses only data oftentimes incomplete, either to establish with precision the nature of this affection, or even to assign it its real symptoms. I do not think, for instance, with M. Lallemand, that a sanguineous congestion always precedes softening of the brain ; I think that there are some cases, where the first appreciable lesion consists even in the diminution of the consistence of the nervous pulp, and this diminution of consistence may continue the only alteration. Instead of being reddened by blood, the part softened may have preserved its natural colour, or even present a remarkable want of colour, without, in the latter case, any thing warranting us in thinking, as M. Lallemand had admitted, that pus infiltrated the nervous pulp so divested of colour. Softening of the brain does not necessarily commence by an hyperemia; it is not necessarily complicated, during its course, even with sanguineous congestion ; neither does it necessarily lead to suppuration ; it exists as a lesion independent of any other lesion ; it is not, uniformly, either the termination or commencement of any other, but many others may accidentally become complicated with it. In several cases, it is true, during its isolated existence, it is but one of the elements of inflammation of the brain; but because the irritation produced by the entrance of a ball into the brain, causes around this foreign body the formation of a softening, with sanguineous congestion, infiltration of pus, &c., is that, in sound logic, a reason for concluding that every softening should be considered as an inflammatory disease ?

All that we can discover, in a very great number of cases, is a diminution in the consistence of the nervous pulp, its change into a sort of *bouillie*, its slow or quick return to this half-liquid state, which was its primitive state. With respect to the causes of this alteration, they often escape us ; with respect to its nature, even that is not known to us ; and if, in this state of ignorance, we go beyond what facts teach us, if we assert that every softening is an inflammation, a degree or form of that, which, in a language altogether arbitrary, we call an encephalitis, we do great injury to science ; for, it is quite clear, that, the moment we shall have placed such an opinion between our own understanding and facts, the latter will be no farther admitted by us, but so far as they shall come to confirm our hypothesis ; there will thenceforth be a stop to all further progress. I think then with M. Rostan, that, until more is known on the subject, the term softening is preferable to any other to designate the alteration of the brain we are now about to consider.

What shall I now say of the symptoms which have been assigned to softening of the brain? Read the several works published on this subject, and you will be astonished to see how much the symptomatology varies in them all. Such a morbid phenomenon, permanent flexion (contracture), for instance, which with one observer holds the first rank among the symptoms, is scarcely mentioned by another. It is the same with pain of head, disturbance of the intelligence, &c. The first phenomena which mark the existence of cerebral softening, are equally far from being described identically by different authors. For some persons it is always easy to distinguish, by the difference of their commencement, a hemorrhage of the brain, and a softening of this organ; for others such a distinction is often impossible.

These differences of opinion are no doubt attributable to this, that each author has made his observations on subjects placed in conditions different in respect of age, and constitution, whence there resulted, with regard to the symptoms, so many special forms of the disease. Each person thus judging only from the point of view where he happened to be placed, has been able to discover only one side of the facts, and thus he remained incomplete in their description. I have endeavoured to avoid this rock by proceeding in a different course. After having detailed a certain number of cases, calculated to point out the leading differences which may be presented by softening of the brain, with regard to its symptoms, its commencements, its duration, and its nature, I have endeavoured to attain the most complete description possible of this affection, by combining with the facts collected by myself those previously published by different authors.

SECTION I.

Particular Cases.

I HAVE ranged the cases in a certain number of groups, which are reduced to the following:—

In the first group, I have placed some remarkable cases in which cerebral softening remained completely latent.

The second group includes cases in which the only functional disturbance on the part of the nervous centres was a lesion of motion, a lesion far from being always the same.

To a third group I attached some cases where the lesion of sensibility was the prevailing phenomenon.

To a fourth group I referred other cases, where with varied disturbances of motion and sensation, an alteration of intelligence or of speech coincided.

Finally, in a fifth group, I have detailed cases where the only functional disturbance was loss of speech.

CHAPTER I.

CASES WHERE NO SYMPTOM ANNOUNCED THE SOFTENING.

CASE 1.—This was the case of an old man, eighty-one years of age, who had been for a long time deprived of all appetite for food: he sank gradually, and died in an adynamic state. At the autopsy there was found a softening at the base of the anterior lobe of the left hemisphere; around the softening the cerebral substance gradually recovered its natural consistence, without being changed in colour. A broad eschar formed on the sacrum: a blackish tint of the villosities of the stomach and duodenum was the only lesion found in the digestive organs.

Case 2.—This was the case of a man forty-five years of age, who laboured under a chronic affection of the stomach and liver. He complained of pain in the right hypochondrium, where there was found a hard tumour, painful to the touch. Whilst in the hospital, he had several times vomited an abundance of black matter: he died of exhaustion, but never had the least disturbance with respect to intelligence, or the power of motion; and yet, at the post mortem, there was found extensive softening of the cerebral hemispheres in several parts.

Case 3.—Softening of the posterior lobe of the left hemisphere, of the middle lobe, of the right lobe, and of the fornix. No symptom, however, indicated this. There were cancerous products in the pleuræ, mesentery, liver, pancreas, and one of the kidneys.

Case 4.—This was the case of a man, fifty-five years of age, who had been wounded in the head in the Russian campaign; as a vestige of this wound there was a perceptible depression, the size of a five franc piece, on the middle part of the left parietal bone, yet he complained of no headach; intelligence perfect; his senses and speech all perfect; he died in the hospital of phthisis. On the post mortem the circumvolutions of the brain, corresponding to the site of the wound, were softened; the bone over this part had been completely destroyed, and nothing but a mere plate of cartilage was interposed between the hairy scalp and the brain; the arachnoid and pia mater were very much thickened in this part.

CHAPTER II.

CASES WHERE THE DISTURBANCE OF MOTION WAS THE ONLY SYMPTOM.

It has been stated, that in softening of the brain there was a period of the disease when the limbs presented the phenomenon of softening in different degrees. We shall endeavour to show in the following cases, that this phenomenon, though very frequent, is not constant, and that in its stead we may meet either simple paralysis, or other disturbances of motion; such as convulsions or tetanic rigidity. We shall commence with cases wherein the flexion (contracture) took place transiently or permanently.

Case 5.—This was the case of a woman, sixty-six years old, who entered the hospital with all the symptoms of diseased heart. After some days she found herself unable to move the extremities of the left side; her fore-arm also was strongly flexed on the arm, and the fingers so flexed that their ends touched the palm of the hand: no pain in the parts flexed; their sensibility perfect; intelligence and speech natural; no headach. The third day from the appearance of the flexion of the fore-arm and fingers, her habitual dyspnœa increased, and she died in a state of asphyxia in the course of the night.

Post mortem. Cranium.—Several of the circumvolutions of the right hemisphere transformed in their surface into a sort of reddish bouillie; in the substance also of this hemisphere, on a level with the centrum ovale of Vieussens, there were five or six points where the cerebral pulp was similarly softened.

Thorax.—Heart large; hypertrophy of its parietes and dilatation of its cavities.

CASE 6.—*Softening of a portion of the right hemisphere—No other symptoms but permanent contraction of the left upper extremity—Pulmonary tubercles.*

A woman, seventy-eight years old, entered the La Pitié in a state of marasmus; excessive diarrhœa, and a cough of long standing. She answered questions perfectly well, but could not move at will either the upper or lower extremities of the left side. The fore-arm was flexed on the arm, and the hand formed an acute angle with the anterior surface of the fore-arm. The lower extremity, which was in a state of complete resolution, presented no appearance of flexion. She stated that about a fortnight before coming to hospital she was astonished to see the ring finger and little finger of the left hand suddenly flexed, without her being able to extend them again. After a few days the entire left hand became flexed on the fore-arm, and the latter soon after on the arm; at the same time the lower extremity became numbed, heavier than the other, and at last became completely paralysed, but exhibited no signs of flexion. The patient always retained her consciousness, never had any pain of head, nor of any part of the body. She had pulmonary phthisis; at the summit of the right lung was an immense cavern. After remaining in the hospital about twenty days, she sank gradually, without exhibiting any new phenomenon on the part of the nervous system.

Post mortem. A little below the circumvolutions, at the junction of the anterior and middle lobes of the right hemisphere, the nervous substance was manifestly softened; no injection accompanied this softening; the portion of brain softened resembled in colour and consistence a strong solution of starch in water.

Remarks.—In this case flexion (contracture) was the only phenomenon caused by the softening. It was at first but partial, being limited to two fingers; it then gradually increased, without, however, extending to the lower extremity, which presented nothing but simple paralysis.

CASE 7.—*Softening affecting at the same time the optic thalamus and corpus striatum of one side—Flexion at the commencement, then resolution of the limbs—No other cerebral symptom—Aneurism of the aorta.*

A man, fifty-three years of age, had been for a long time subject to rheumatic pains in different articulations. Two years before entering the hospital, he began to feel violent beating of the heart, and his respiration became constrained and difficult. We soon recognised organic disease of the heart: all along the sternum the bruit de soufflet was distinctly heard; pulse frequent, small, and regular. After being twenty days in the hospital, he showed us one morning the right arm, which was strongly contracted; he stated that on awakening he was astonished to find himself unable to extend the hand on the fore-arm. The latter also was flexed on the arm, and the fingers being flexed on the palm of the hand, impressed on the skin the mark of the nails. The idea of softening of the brain occurred to us at the moment. He said he had never suffered any pain of head, dizziness, or disturbance of intellect. He was bled, and blisters to lower extremities. The flexion went off in the night, and on the following morning we found the two extremities of the left side completely relaxed but paralysed. No change occurred on the part of the nervous system. The disease of the heart pursued its course, the limbs became infiltrated, ascites manifested itself, and the patient died suddenly.

Post mortem. Cranium.—The brain presented nothing remarkable till we got to the level of the optic thalamus and corpus striatum of the left side. These two bodies were changed into a yellowish soft substance. The nervous substance around them was also softened.

Thorax.—Hypertrophy of the parietes of both ventricles, with perceptible diminution of the cavity of the left ventricle. From its origin, and as far as its entrance into the abdomen, the aorta was three times its natural breadth. Towards the middle of the descending portion of the thoracic aorta, there was found a vast aneurismal pouch, which opened into the posterior mediastinum. The latter was filled with large clots of blood. Thence the cause of the sudden death.

Remarks.—This case differs from the two preceding in this, that the flexion of the limb was but temporary, and was soon replaced by simple paralysis. The latter continued till death, which was owing to the bursting of the aneurism of the thoracic aorta. In this case also, as in the others, it is evident from the sudden appearance of the contraction, without any other nervous phenomenon preceding this lesion of motion, that the softening took place all at once. This is the first case in which we see this alteration seated in the optic thalamus and corpus striatum.

CASE 8.—*Softening of the anterior and middle lobes of one of the hemispheres—Flexion at the commencement—Alternation of flexion and simple paralysis during the course of the disease—Chronic gastro-enteritis.*

A woman, thirty-seven years old, was subject from her youth to an almost constant diarrhœa. Digestion had been a long time laborious; at intervals she coughed a little. When we first saw her, she was pale and emaciated. Two months before entering the hospital, a curious circumstance occurred to her: from time to time the little and ring fingers of the left hand were flexed with force, without the will of the patient being able to prevent it, towards the palm of the hand. This partial flexion lasted from about a quarter of an hour to two hours; it then ceased. During the first month, it returned only every three or four days, no other nervous symptom accompanying it. At the beginning of the second month, all the fingers became flexed, at intervals, on the palm of the hand, and soon after the hand itself was so flexed as to make an acute angle with the anterior surface of the fore-arm; the hand also was so turned that its palm, instead of being on the same plane as the anterior surface of the fore-arm, looked outwards. This double flexion of the fingers, and hand from being but temporary, had become permanent, when we saw her. Hitherto the fore-arm itself was not affected; but we soon saw it flexed on the arm, at first temporarily, and then permanently. But what was remarkable, when the flexion of the fore-arm was well-established, that of the fingers diminished, then ceased entirely, and at the same time that of the hand became less violent. For fifteen days the flexion of the fore-arm was constant; then this also diminished, and was finally replaced by simple paralysis. For a long time the latter existed in the left lower extremity. For eight days we observed nothing but hemiplegia, without any trace of contraction; then the latter re-appeared. From thenceforward the upper extremity of the left side was observed to be alternately, sometimes in a state of complete resolution, sometimes in a state of flexion. This flexion affected, either alternately or simultaneously, the fingers, the hand, the fore-arm. Three or four times the leg became violently flexed on the thigh. Sensibility retained in the extremities of the left side; no pain, headach, or any disturbance in the intellect. The diarrhœa, however, became more severe; a large eschar formed on the sacrum, and the patient died.

Post mortem. Cranium.—Sub-arachnoid cellular tissue infiltrated with a little transparent serum; two spoonfuls of serum in the lateral ventricles. The posterior and middle lobes of the right hemisphere changed, for two-thirds of their extent, into a yellowish bouillie, in which no vessel is observed, nor any sanguineous effusion. This softening commences about one inch below the circumvolutions of the convexity; it extends nearly to the level of the optic thalamus, without involving that part: anteriorly it is terminated at the union of the two posterior thirds with the anterior third of the optic thalamus; posteriorly it reaches nearly to the periphery of the brain.

Thorax.—Some miliary tubercles, surrounded by healthy parenchyma, were scattered through the upper lobe of the left lung

Abdomen.—Inner surface of stomach presented a slate-coloured tint in three-fourths of its extent. The gastric mucous membrane exhibited considerable thickness, and its consistence was greater than natural. The villosities of the duodenum and of the commencement of the jejunum presented a black tint. Numerous ulcerations, with black ground and raised edges, traversed the mucous membrane of the ileum; some were also found in the cæcum, and at the commencement of the colon. Mesenteric ganglia large, and some contained tubercular matter. Liver pale, friable, and greases the scalpel.

Remarks.—In the cases preceding this, we saw, first, the flexion continue during the entire disease; we then saw other cases, in which, only showing itself at the commencement, it was succeeded by simple paralysis. In the present case, things are quite otherwise; it is, again, by flexion that the lesion of motion exists; paralysis succeeds it, then these two phenomena alternate. Another remarkable circumstance in this case is, that at first the flexion showed itself only at intervals, and between these intervals the extremities recovered perfectly their power of movement. In this case, also, as in all those hitherto detailed, the principal or only seat of the flexion was the upper extremity; the lower extremity, however, participated in the lesion of motion, but frequently it was merely paralysed.

Shall I now say one word regarding the chronic affection to which, for a long time back, the patient had been a prey? This affection followed a course the inverse of its ordinary course. The digestive tube was first attacked, or at least it first manifested symptoms, and in the lung, on the contrary, the lesion seemed only to commence. With so few disturbances in the respiratory apparatus, the liver had, however, already undergone the fatty degenerescence.

CASE 9.—*Softening of the middle lobe of one of the hemispheres—Hemiplegia without complication of any flexion.*

A tailor, sixty-three years old, entered the hospital with jaundice and ascites, of which a liver disease seemed to us to be the cause; much emaciated. One day he complained of extraordinary weight and numbness in the upper and lower extremities of the left side. The hand of this side less able to grasp objects than usual. When he essayed to walk, he said he thought a weight of fifty pounds held his left foot to the ground; no pain of head, dizziness, or sign of cerebral congestion. Ultimately hemiplegia of the left side. About two months after the paralysis appeared, diarrhœa set in, and the patient died, without having exhibited to the last moment any additional symptom on the side of the nervous system.

Post mortem. Cranium.—A little below the centrum ovale of Vieussens, and at an almost equal distance from its anterior and posterior extremities, the right hemisphere presents a softening for a space capable of admitting a nut; this softening is of a greyish white.

Abdomen.—Yellowish serum in the peritoneum; cirrhosis of the liver; mucous membrane of stomach marked with bright red dots towards its great cul de sac; several of the intestinal follicles, and several points of the colon, very much injected.

Remarks.—Here was a well marked case, in which there was no flexion of the limbs. The only phenomenon indicative of softening was paralysis, which was slowly established, as if a gradual compression was made on the brain. Thus, in reference to a lesion constantly identical in its nature and its seat, every case we detail presents to us different functional disturbances. We shall see, in the following fact, paralysis again manifest itself without flexion, and, besides, present at its commencement, and in its progress, circumstances which will again exhibit to us under a new point of view the symptoms of softening of the brain.

CASE 10.—*Softening of one of the anterior lobes—At the commencement, signs of cerebral congestion—Subsequently hemiplegia, which again disappeared—Blindness on the side paralysed.*

A young man, eighteen years old, of a strong constitution, began to experience, at the commencement of the month of April, a pain of head, seated principally towards the forehead; at the same time dizziness, vertigo, tinnitus aurium. With these signs of cerebral congestion, he entered the hospital the 10th of April. He stated the particulars of his own case with the greatest precision; face red, and expressive of exhaustion; no fever; motion perfect, as was the cutaneous sensibility; sense of hearing impaired for the last three or four days; twice already, in the course of the two preceding years, he experienced similar symptoms, always accompanied with some deafness (thirty leeches to the neck; purgative mixture, &c.). In the course of the day, headach, vertigo, tinnitus aurium disappeared, as also the deafness, and on the following morning (12th of April) patient found himself very well. A little after the visit, he began to feel in the upper extremity of the left side a numbness, which went on increasing till night; it was also weaker than the other; he slept during the night, but, on awaking, the left upper extremity was entirely deprived of motion. On our visit of the 13th, we found this limb extended along the trunk, and entirely paralysed; no sign of flexion; sensibility of skin of this limb still retained; lower extremity of the same side still moveable. The right commissure slightly drawn up; this deviation more evident when the patient smiles; cannot see with the left eye; the two pupils equally dilated; pulse had some frequency (bleeding to twelve ounces, sinapisms, purgative lavement). No evacuation from bowels.

14th. Paralysis extended to the left lower extremity; patient did not answer questions, except when strongly pressed (thirty leeches to neck, blisters to thighs, purgative mixture).

15th. Same state; two stools after the lavement.

From 16th to 25th. Hemiplegia still continued; every morning we found the left upper eyebrow half depressed over the globe of the eye, and the right commissure of the lips drawn upwards; tongue, which was with difficulty protruded, deviated a little to the left. From this period to the 1st of May, the patient was twice bled, and leeches were frequently applied, as also sinapisms; still his state was becoming worse, when, on the 1st of May, there was a visible amendment; some movements began to take place in the parts paralysed. On the 4th, he could move the upper and lower extremities tolerably well; lips and tongue no longer deviated; left eye recovered its sight; paralysis of the levator muscle of the left eyebrow ceased; intelligence perfect; answers accurate; pulse no longer frequent. In this state of things, we began to look forward to his recovery, and for the four days following everything seemed to confirm our hope; but on the 8th, without any known cause, he raved in the night. On the 9th, we found him sunk in profound coma; he spoke not; evinced no pain on being pinched; pulse very frequent (thirty leeches to neck); whilst the blood was flowing, he emerged from the stupor, and returned to the state he was in on the preceding days. From this period the movements of the limbs improved every day, except that he could not grasp any thing firmly in his left hand. Thus there remained but slight traces of the disease of the brain. But then new symptoms appeared; the tongue became red and dry; severe diarrhœa set in; the skin of the great trochanter on the left side presented a livid red tint, announcing the approaching formation of an eschar. From this time pulse became very frequent and very small; temperature of skin was raised, and a rapid wasting took place. He was again put on strict diet.

24th. An enormous eschar formed on the great trochanter; diarrhœa very abundant; tongue very red, brown in the centre; extreme debility; intelligence still perfect; no trace of the paralysis, but a certain weight in the left lower extremity. Towards the end of May, a large ulcer formed in the external upper part of the left hand; increasing debility. He died the commencement of June, without presenting any additional symptoms connected with the brain.

Post mortem thirteen hours after death. General marasmus; large ulceration on the left trochanter.

Cranium.—Cerebral circumvolutions flattened on the upper surface of the anterior lobe of the right hemisphere, from the edge of this lobe to the corpus striatum. In this extent, the grey colour of the circumvolutions was replaced by a dirty white colour, shaded by a light rose tint. This portion, when touched, appears diffluent, and its extreme softness forms a striking contrast with the great consistence of the rest of the encephalon. This alteration extended in height from the circumvolutions of the convexity, to those of the base. It occupied nearly all the breadth of the anterior lobe. A reddish liquid filled the lateral ventricles so as to distend them.

Thorax.—Nothing particular.

Abdomen.—Stomach distended with gas and liquids; its inner surface presented a bright redness in several points of its extent. Duodenum white in the first portion. In the second and beginning of third, its mucous membrane marked by a number of red points crowded together. The inner surface of the cæcum, ascending colon, and a great part of the transverse colon, presented an intense red appearance, arranged in numerous patches. Where these patches existed the mucous membrane was softened.

Remarks.—The symptoms of cerebral congestion presented by this individual on his admission, are such as are frequently met with, and they ordinarily yield to blood-letting, and other antiphlogistic means. Here they were the precursors of a much more serious affection; hemiplegia complicated them, or rather succeeded them, for it is remarkable, that from the moment the extremities of the left side began to move less easily, the signs of cerebral congestion disappeared; even the deafness ceased. The left side of the face and eye-brow were also affected; the tongue also deviated to the left. In none of the parts paralysed was there any flexion observed. Nearly at the same time the sight of the left eye went. In the midst of these disturbances intelligence remained intact, and even at a later period it was only affected at intervals. Coma often appeared, which went away the next day; thus, the only constant functional disturbance was that of motion; for the amaurosis of the left side was also but temporary. At last a period arrived when motion itself was so far restored, that there were no longer any traces of paralysis, and the cerebral affection seemed cured. It was then that new phenomena appeared connected with the enormous eschar on one of the trochanters, and with the gastro-intestinal inflammation which arose. It was of these the patient died. Should we expect to find any lesion in the brain? We could scarcely think so, since the symptoms of this lesion had for a long time ceased to exist. Some days before death there was nothing but that general debility of motion, sensation, and intelligence, characterising the adynamic state, and which is not connected with any specific alteration of the encephalon and its appendages. However, a very serious lesion still existed in the brain; it continued still very intense in the absence of the symptoms to which it first gave rise.

This lesion was precisely limited to one of the anterior lobes, and yet the upper extremity had been paralysed; it extended to the circumvolutions, and yet the disturbance of the intelligence was but a secondary and a transitory phenomenon. In fine, speech was still retained though the softening was seated in the anterior lobe.

Case 11.—*Softening of one of the hemispheres—Injection of the other—Convulsive movements—State of coma on the last day.*

A woman, aged twenty-seven years, after having exercised very much through Paris during the month of July, was seized with dizziness and pain of head, principally seated in front; had no sleep nor appetite for food. These symptoms of lassitude, with tendency to cerebral congestion, existed for ten days, when the patient was submitted to our examination. Pain of head still continued, occupying only the front of head, and particularly the two supra-orbital regions. Patient had vertigo; felt carotids beat strongly; face red and swollen; a sort of numbness of the limbs; pulse frequent; skin hot; tongue foul (she was instantly bled). Next day, state nearly the same (thirty leeches to anus). From thirteen to fourteen days elapsed from the commencement of the attack, when she was seized suddenly with violent convulsions of the left upper extremity, which returned from seven to eight times during the first twenty-four hours of their appearance, and lasted each time about twenty minutes. During the intervals the limb enjoyed all its power of moving; the fingers were occasionally observed to be moved convulsively (bled again, and sinapisms applied to the lower extremities). In a day or two the right side of the face also became the seat of convulsions. In the midst of all this disturbance of motion, intelligence and sensation were, as yet, intact; but the matter was soon changed. Twenty-four hours after, the convulsive fits became more frequent; affected the entire body; took possession, either successively or simultaneously, of both sides of the face, right and left extremities; they were always more intense in the upper extremities than in the lower; the first signs of cerebral congestion now became more intense, in proportion as the fits became more frequent; face very much injected; intellect at first struck with stupor, became at last extinct; then coma set in; the convulsions ceased; respiration became embarrassed, and the patient died in a state of asphyxia.

Post mortem. The sub-arachnoid cellular tissue of the convexity of the hemispheres infiltrated with a slightly turbid serum; circumvolutions not changed either in colour or consistence; about two inches below the bottom of the anfractuosities, towards the centre of the space extending between the extremity of the anterior lobe of the right hemisphere and the corpus striatum of the same side, and not far from the interlobular fissure, the cerebral pulp is sensibly softened, and this softened part is of a deep red; this softening may occupy about a cubic inch; around it the cerebral substance considerably injected; in the anterior lobe of the left hemisphere, nearly in the same place, there was observed such an injection of the brain that its substance appeared as it were ecchymosed; the consistence of this part natural.

Remarks.—We do not think the symptoms of cerebral congestion in this case depended on the softening which we afterwards detected. This softening was formed subsequently, and at first there was probably but a greater afflux of blood than natural in the cerebral vessels. We may observe, besides, what little influence the bleeding exercised on the symptoms by which the cerebral hyperemia evinced its existence, and consequently on the hyperemia itself. The latter was in some measure the precursor of the more serious lesion, which succeeded it after the lapse of twelve days, and with which the appearance of the convulsive movements was connected. Here then the softening announced itself in a manner altogether different from the preceding cases: the prominent functional disturbance still affected motion, but this disturbance was quite of another kind; it is no longer flexion, as in several cases—no longer paralysis, as in others. The convulsions were first confined to the left side, and it was in the right hemisphere that the softening was found. Subsequently the right side of the body became convulsed in its turn, and there was found in the left hemisphere a lesion less advanced than that of the right hemisphere, which seems to be a first degree of it. Observe, accordingly, that the softening here has a well-marked red colour, and that around it there was considerable injection of the nervous pulp. One would be disposed then to admit that this redness and injection preceded the softening; if life had been prolonged, it is extremely probable that the ecchymosed portion of the left hemisphere would have lost its consistence. Besides, the symptoms support this mode of viewing the matter. They were observed to be the same on both sides of the body; and still more, the side of the body last convulsed was opposite to the side of the brain where we found the lesion, which we consider as the one less advanced, and as the first degree of the other. The state of coma observed on the last day is only the state in which most persons die who have been subject to convulsions more or less prolonged. But so far the disturbance of motion had not in the slightest degree involved that of the intelligence. Observe also, that the double lesion of the brain was seated on each side in the same point; that this lesion, as in the subject of the ninth case, again resided in the most anterior part of the hemispheres, anterior to the corpora striata, and that notwithstanding the alteration of motion commenced and always predominated in the upper extremities. Neither was there loss of speech; for up to the appearance of the comatose state, the patient constantly explained how she felt without evincing any difficulty of articulation.

Case 13.—*Softening in the two hemispheres—Paralysis of long standing; subsequently tetanic rigidity of one of the arms produced by a new softening—Delirium towards the end.*

A man, fifty-five years old, entered the La Charité with hemiplegia of the right side. We learned from him that he had lost by degrees the motion of the right side, without having ever had either contractions or convulsions; though he explained his state very well, and evinced no aberration of intellect, still there was a vagueness in his answers which denoted a degree of mental debility. At the end of three months, his state became suddenly changed; the habitual torpor in which he had been frequently plunged was succeeded by a general state of agitation; he was quite delirious; extremities of the right side immoveable and flaccid as usual; those of the left side presented new phenomena—thus the upper extremity, which was no longer capable of voluntary motion, was extended along the trunk, and presented a rigidity like to that of tetanus; it was not flexion (contracture); the patient, by a sort of automatic motion, constantly threw off his bed-clothes with his left leg. The next day we no longer found any trace of the excitement of the preceding day. The delirium was replaced by a dulness of intellect; the left extremities were paralysed as those of the right side; the five following days the features became altered; the face was yellow; tongue dry; pulse very frequent; abdomen tympanitic; severe diarrhœa set in, and the patient died.

Post mortem. Pia mater injected over the entire convexity of the hemispheres; the nervous substance, very firm except in one point, which we shall mention, was as it were sanded (sablée) with a great number of red points. At the anterior and inner extremity of the left hemisphere, the latter appeared as if depressed, and gave to the finger the sensation of the parietes of an empty cavity; the arachnoid covering this portion of the brain was of an intense red colour; beneath it the cerebral substance was reduced into a bouillie of a rose-white colour; this softening extended posteriorly as far as the corpus striatum, the most posterior part of which it hardly reached; it penetrated in depth to a little above the level of the centrum ovale; it occupied a breadth of three inches. In this same left hemisphere, exterior and a little anterior to the optic thalamus, and on a level with it, there existed to the extent of two inches in every direction, a second softening, of a chocolate colour.

In the right hemisphere, the corpus striatum presented to us in its middle part a third softening, of a yellow reddish colour; it was limited exactly to the central part of this body, which, around it, had preserved its usual colour.

Remarks.—The double softening of which the left hemisphere was here the seat, gave rise to no other phenomena than to a progressive diminution of motion in the right extremities, and ultimately to their complete paralysis. In this case, nevertheless, there was not more intellectual torpor than in the preceding cases.

Though this softening, existing in two different points, had occupied rather an extensive portion of the left hemisphere, the disease followed a course altogether chronic ; the softening of the right hemisphere, on the contrary, though far less considerable, produced more acute symptoms. It is on it that the tetanic rigidity of the right arm depended, which we have not yet noticed in any of our cases, and which must not be confounded with flexion (contracture) ; this is also the first time we see delirium appear ; but in this case was it not owing to the manifest hyperemia of which the meninges were the seat ? This case resembles the preceding in the nature of the softening, which, wherever it existed, was coloured with different red shades.

With respect to the softening, here again, as in several of our cases, it was not indicated by the seat of the lesion of motion : in the left hemisphere, to be sure, there was double softening, one in the anterior lobe, the other in the middle lobe, and the two extremities of the right side were paralysed ; but in the right hemisphere, the middle part of the corpus striatum is the only part altered, and yet the left upper extremity presents in its movements a disturbance which can only be explained by this lesion ; the lower extremity, on the contrary, manifested neither paralysis, nor flexion, nor convulsion, nor tetanic rigidity.

Case 13.—*Softening of the optic thalamus of the right side—Diffluent state of the fornix—Tetanic phenomena at first—Subsequently alternations of paralysis and convulsive movements on the left side of the body.*

A pavior, thirty years of age, strong constitution, experienced on a sudden, without any known cause, a rigidity of the nape of the neck ; retroversion of the head ; trunk soon after inclined in the same direction. On entering the hospital, after a lapse of six days, his state was as follows :—Strong retroversion of the head ; patient could neither move it forwards, nor incline it to either side ; trunk arched, so that the middle of the back no longer rested on the bed ; acute pains in the back of the neck, which were not increased on pressure ; the jaws presented the commencement of trismus. No other functional disturbance. (Patient was bled from the arm ; two days after, thirty leeches to anus.) Some days now elapsed, and no change ; retroversion of the head continued, as well as the incomplete trismus already noticed ; but further, the muscles of the extremities and of the abdominal parietes presented a commencement of rigidity. The patient said he felt some uneasiness in the arms. Thus tetanus, at first partial, was now become general, and already lasted for fifteen days. (He was bled again.) The following day, the disease presented another aspect. The retroversion of the head continued, but it was at the same time inclined to the left ; the rigidity of the abdominal parietes and that of the extremities disappeared ; but the left upper extremity had lost all the power of motion ; when raised, it fell back, as an inert mass ; the skin of it, when severely pinched, gave the patient no pain ; he had his eyes shut, and seemed asleep ; but we could, by speaking to him, arouse him from this stupor, and then his answers were accurate ; he could not tell us at what period his left arm became paralysed ; he said he did not recollect ; and he was very much astonished at not being able to move it ; he said he no longer felt it. Pulse acquired a slight frequency. Fifteen leeches were applied across each jugular vein, and a blister to each leg ; during the day, and whilst the leech-bites were bleeding, the paralysed limb was seized with convulsive movements. On the next morning, we found the stupor still more profound ; pupils very much dilated ; they contracted, however, at the light. No appearance of convulsion during the visit ; the paralysis of the left arm seemed as marked as on the preceding day ; pulse frequent ; respiration accelerated. A little time after we left the patient, the convulsions reappeared, but this time they were not confined to the paralysed limb ; the face and both sides of the body were several times affected with them.

The two following days, no convulsions; left arm remained constantly in a state of simple resolution; the other limbs moved at the will of the patient; he was in a constant stupor; when spoken to, he opened his eyes, strove to answer, but could not articulate; pulse very frequent and very small; pupils very much dilated, still they contracted under the impression of light. Next day, the scene changed; great agitation; continual screams; face covered with sweat. In the course of the day, violent convulsions, extending to all the body, in the midst of which the patient died.

Post mortem. Pia mater surrounding brain both at the convexity and at the base, very much injected; the superficial grey substance of the circumvolution participates in this injection; the lateral ventricles filled with limpid serum in such a quantity as to distend them; the posterior part of the fornix changed into a dull white diffluent bouillie; the right optic thalamus, in its middle part, presents a softening as perfect as that of the fornix; it differs, however, in this, that it presents a reddish tint; near its periphery this ganglion resumed all its consistence.

Remarks.—Three periods may be distinguished, with respect to the symptoms, in the disease which forms the subject of the preceding case. First period was marked by phenomena resembling those of tetanus; with these the disease commenced. In the second, the tetanic phenomena disappeared, and nothing was observed but simple paralysis, limited to one of the upper extremities. In the third period, in fine, this paralysis alternated with convulsive movements, which developing themselves only in the part deprived of motion, then extend to the entire body. Intelligence free during the first period. In the second and third periods, a stupor was observed, which at first did not prevent the patient from answering distinctly the questions put to him. At a subsequent period this stupor became more profound, and ultimately was replaced by a convulsive agitation, in which the patient died.

To explain these complex symptoms, we find lesions equally complex, whose precise part in causing the symptoms it is rather difficult to assign. And first, it may be asked, if, in the first period, at the time when nothing was yet observed but symptoms of tetanus, the right optic thalamus was already softened. Did these symptoms depend rather on an affection of the meninges? But then there would have been some disturbance in the intelligence. Now, that did not take place. Thus we are inclined to think, that the bright red injections of the pia mater, and of the circumvolutions, ascertained by the post mortem, were formed only in the third period, at the time the intelligence became disturbed. Did those symptoms of tetanus depend rather on the softening of the fornix? The only answer we can give to this is, that we have frequently found on the dead body a similar softening, without anything similar having taken place during life. In no case have we seen softening of the fornix, whether partial or general, produce any cerebral symptoms whatever. We cannot, then, assert positively that the lesion which produced the tetanic symptoms was of the number of those revealed by the post mortem. Perhaps the softening of the right optic thalamus took place during the morbid process which produced the tetanus. The phenomenon which no doubt depended on it, the paralysis of the left arm, showed itself only at the same time that the tetanic phenomena ceased. With respect to the convulsions, it is probable that they depended on the affection of the membranes, and of that of the grey substance subjacent to them. The partial convulsive movements which opened the scene, and which occurred in the paralysed limb, might alone have been referred to the softening of the optic thalamus. It is probable that the great distension of the ventricles by serum performed a part in the production of the stupor. This case, contrary to several of the preceding, might be urged in favour of those who place the source of the movements of the upper extremities in the optic thalami.

CHAPTER III.

CASES WHEREIN, WITH DIFFERENT LESIONS OF MOTION, THERE EXISTED A LESION OF SENSIBILITY.

According to some of those who have written on softening of the brain, pain of head is one of the most constant symptoms, and it marks particularly the commencement of the affection. The examples already quoted prove at least that, in a considerable number of cases, this symptom may be wanting. We shall now see a case where pain of head was a predominant symptom.

But it is not merely by pain of head that softening may announce itself. There are cases also where, whether this headach exists or not, the patients feel in different parts of the body, and particularly in the extremities, acute pains, sometimes continued, sometimes intermittent, which precede the other symptoms, or complicate them. These pains might occasionally impose on one for rheumatic pains. It is then very important to be at least apprised of the possibility of their existence.

Case 14.—*Softening of the right hemisphere—Hemorrhage into the other hemisphere—Pain of head, with commencing paralysis of the limbs of the left side—Subsequently, violent attack of apoplexy.*

A woman, fifty-three years of age, had always enjoyed good health. In the month of September, 1831, she began to feel, at the junction of the temporal and parietal regions of the right side, a pain which was at first dull, and existed only at intervals. At the end of a fortnight, the pain became more acute; every two or three days it was suddenly aggravated. After remaining thus from seven to eight minutes, it diminished, still acute enough to prevent her from her usual employment. She then applied to a physician, who bled her; pain was not diminished. Two or three days after, she perceived that she could not hold objects as well with her left as with her right hand. She then entered the hospital La Pitié. At this time she had had the pain of head about twenty-five days; intellects perfect. From the nature of her headach, we would have employed sulphate of quinine, combined with opium, suspecting it to be nervous, did there not exist in the left extremities phenomena which seemed to indicate compression or disorganisation in some part of the right cerebral hemisphere. These phenomena were the following:—The patient felt in these limbs, for the last few days, a degree of debility, which continued to increase. She could, however, move them, but with more difficulty; and when she tried to walk, she fancied her left leg was about to be withdrawn from under her. The pulp of the fingers of the left hand were the constant seat of troublesome formication; sensibility of skin natural. She was bled again, without any effect of any kind. Twenty leeches were applied twice to the anus, and a large blister to the nape of the neck. One day whilst walking in the ward, she fell down, deprived of consciousness and motion. On the following morning we found her in the state of one who had been just struck with apoplexy. She died in the evening.

Post mortem. Meninges very much injected; sanguineous suffusion in the pia mater covering the left hemisphere. On removing some slices from the left hemisphere, the scalpel fell into a large cavity filled with black blood, having the consistence of currant jelly. It occupied at least one third of the hemisphere; the optic thalamus and corpus striatum were affected, and the blood burst into the left ventricle; the septum was not injured. The right hemisphere presented quite a different appearance; externally it appeared healthy, as the left; but at two inches depth it began to lose its consistence; at first, a little softer than at its periphery, it was changed a little lower down into a bouillie of a dirty grey colour, traversed by some vessels, without any of the blood in them having spread. This softening terminated anteriorly towards the anterior part of the corpus striatum, and behind, extended a little beyond the posterior extremity of this body. It terminated inferiorly towards the level of the corpus striatum, being situated more externally than it, and it left it completely intact.

Remarks.—If in the 13th case we were puzzled in connecting the several lesions with the symptoms, such is not the case here, where every thing is plain and manifest. The pain of head and commencement of paralysis of the left extremities are explained by the softening in the right hemisphere. The, copious hemorrhage of the other hemisphere accounts for the phenomena observed towards the close. But why this remarkable pain of head in this case, which was wanting in the other cases cited? Pathological anatomy no longer explains these differences; the lesion found has the same seat, and, as far at least as we can judge, is of the same nature. See, besides, how long a time this pain of head remained the only phenomenon: how long a time also it seemed to be but one of those simple nervous pains, which disappear as they come, without leaving behind them any trace of their existence. In what state was the brain, as long as the headach existed alone? What new lesion came to complicate the change which had produced the headach, when the latter began to become complicated with an alteration of motion? These are very interesting questions, which we are as yet unable to solve, the solution of which, however, may be conceived to be possible by the aid of patient investigations.

Case 15.—*Softening of the right cerebral hemisphere—Acute pains in the left extremities, which subsequently became paralysed, still continuing painful.*

A woman, seventy-one years old, had felt, for about a year before entering the hospital, acute pains in the two extremities of the left side. These, which were at first transient, became lancinating, occupying particularly the anterior surface of the upper extremity, and the posterior surface of the lower extremity. When they were very intense, they gave rise occasionally to slight convulsive twitches of the fingers, and particularly of the index finger. Occasionally too, but only after, or during a pain, the thumb was flexed on the palm of the hand, this flexion never lasting beyond ten or twelve minutes. This was the first time the patient experienced such pains; by degrees they became more frequent, and at last continued; but at the same time they abated of their original severity, and ultimately the patient only felt in the extremities of the left side, and particularly in the upper, a sensation of formication. She continued thus for five months; she then ceased to be able to sustain herself on her left leg as well as before: this limb seemed to her dull and heavy, and she dragged it a little in walking. At this time also the left upper extremity became weaker; she could no longer grasp, or hold any weighty object with the hand of this side. By degrees, this paralysis increased; and at the end of six weeks, it was as complete as possible. But, what was extraordinary, from the time the muscles of the extremities of the left side were entirely deprived of voluntary motion, the pains which had marked the commencement of the disease returned with their original severity, and from time to time they increased so as to make her shed tears. This was the state she was in when she was submitted to our inspection. She was at this time emaciated and pale, eyes sunk, features drawn and expressive of long suffering. Every two or three days, the extremities were as it were furrowed by acute pains. The skin of these parts much more insensible than those of the limbs of the right side. Power of motion completely destroyed in them; right commissure of lips drawn up; tongue deviated visibly to the left; skin of face on right side less sensible than on left; the intelligence perfect. She told us that from her nineteenth to her twenty-third year, she had been tormented with violent beating of the heart accompanied with great difficulty of breathing. These symptoms, however, completely disappeared. After remaining about a month in hospital, a large eschar formed on the sacrum, she gradually wasted away, her feet became œdematous, and she sank exhausted, retaining her intellect to the last.

Post mortem. On a level with, and external to the optic thalamus and corpus striatum of the right side, we found considerable softening of the cerebral substance, which extended to the base of the brain. Anteriorly, it was limited by a line, the internal extremity of which might terminate at the junction of the anterior four-fifths with the posterior fifth of the corpus striatum. Posteriorly it extended nearly to the posterior extremity of the hemisphere. No injection in the softened portion. The softened cerebral substance is of a greyish white in certain points, and yellowish in others. The fornix and septum lucidum diffluent. The two lateral ventricles distended with serum. The great arteries of the brain ossified. Heart and lungs healthy; some ossifications in the aortic valves. The gastric mucous membrane visibly softened towards the great cul de sac in several points.

Remarks.—There have been recently mentioned some cases of neuralgiæ of the trunk and extremities, connected with alterations of the spinal marrow appreciable by anatomy. In the above case, might not one also have taken for simple neuralgic affections those pains which, on the left, occupied principally the trajet of the great nervous cords, and which, for several months, were the only morbid phenomenon? Observe, also, that like all purely nervous pains, they first assumed an intermittent form. Far from ceasing, they re-appeared with new intensity, when the limbs in which they were seated began to be paralysed. And what is truly singular, at the very time when they were most acute, the skin felt but in a very dull manner the impression of external bodies. Thus the sensibility, exalted in the deep-seated parts of the limbs, was extinct at their circumference.

CASE 16.—*Softening of the anterior extremity of one of the hemispheres—At the commencement, headach, and acute pains in different parts of the body—Subsequently flexion and hemiplegia—Death by supervening pneumonia.*

A female, nineteen years of age, seven months before entering the hospital, felt a dull pain in the right temple, which becoming worse from time to time, then became general, and was accompanied with great depression; it often, when very acute, extended to the nape of the neck, thence descended towards the left side of the neck, and involved the entire left upper extremity, extending occasionally to the left lower extremity. These pains were very changeable in character; sometimes she felt as if needles were in her; sometimes as if subjected to very intense heat; pressing the muscles, also, sometimes gave pain; the skin of the left extremities sometimes, too, became painful. Such were the affections of the sensibility, when, in its turn, the power of motion also became affected; the fingers became flexed on the hand, the hand on the fore-arm, and the latter on the arm. The left lower extremity soon participated in this flexion. From the moment the latter supervened, the pains assumed increased intensity. In this state we saw the patient. She then complained of cruel pains in the two extremities; flexion was at its very highest degree. Headach continued, but less acute. (A seton was put in the nape of the neck, the flexed limbs rubbed with anodyne liniment.) From fifteen to twenty days passed on without any change; she then exhibited the following modification in her condition:—Pain of head now changed into a sensation of weight in all the left side of the head; extremities no longer painful; the skin covering them now insensible; fingers and toes benumbed and cold; the flexion was now gone, and was replaced by the mere abolition of motion in the left extremities ; the left side of the face participated in this paralysis, and the right commissure of the lips was drawn up. Whilst in this state, the patient was attacked with pleuro-pneumonia, of which she died.

Post mortem. The entire anterior lobe of the right hemisphere changed into a greyish bouillie. The corpus striatum and anterior portion of the optic thalamus participate in this change, which did not, however, extend to the circumvolutions of the convexity, nor those of the base. These circumvolutions were merely flattened. A mixture of red and grey hepatisation of the inferior lobe of the left lung.

Remarks.—Three periods marked the course of this disease. In the first, the whole disturbance regarded the sensibility ; acute pains occupy, simultaneously or alternately, first the head, then the nape of the neck, then the limbs opposite the side of the head affected. These pains are remarkable both for their intensity and for their character : one might take them for mere nervous pains. After several months comes another period, during which disturbance of motion is added to that of sensation ; the painful limbs become the seat of slight convulsions, which are soon succeeded by strong flexion. From that time the nature of the disease became more evident ; but in its successive phases it was not to rest there, and, at the end of a certain time, it entered in some measure into a third period, during which simple paralysis replaced the flexion of the limbs. Then the pains cease, and the sensibility of the skin, recently so much exalted, is itself destroyed. All this succession of phenomena takes place during a space of from eight to nine months, and the cerebral disease did not yet finish its course, when pneumonia carried off the patient. Amidst all these disturbances of sensation and motion, the intelligence remains intact ; towards the end only a difficulty of speech supervened, which was this time connected with the seat of the lesion in one of the anterior lobes. Observe, besides, that the circumvolutions did not participate in the softening ; and do not overlook this circumstance in a case where the intellectual faculties were preserved so entire, notwithstanding the great extent of the lesion. Remark, also, that in this case, where the change of motion affected the two extremities, the optic thalamus participated a little in the very complete softening of the portion of hemisphere placed before it.

Thus pains in the limbs, accompanied or not with headach, may exist for a long time, at least, as the only symptom of softening of the brain. In the face of these facts, what becomes of the hypothesis, which laid it down, that the alterations of the sensibility denoted an affection of the cerebellum ? It was also asserted, that diseases of the brain, like to those of the lungs, were not accompanied with pain, unless the serous membranes covering them were also affected. Now, in the cases just detailed, the membranes remained perfectly intact, and still there was pain. No inference is to be drawn for pathological purposes, from those frequently quoted experiments, in which, on cutting the cerebral substance in different directions, no appearance of pain was evinced by the animals.

CHAPTER IV.

CASES IN WHICH THE LOSS OF SPEECH WAS THE ONLY SYMPTOM, OR ONE OF THE PREDOMINANT SYMPTOMS.

CASE 17.—*Softening of the two hemispheres—Loss of speech, without lesions of intelligence, motion, or sensation.*

This was the case of a woman, eighty years old, who, three years before entering the hospital, was suddenly deprived of speech; never had loss of consciousness; motion and sensation of the four extremities in the normal state; the senses of hearing, sight, and smell natural. She presented the signs of organic disease of the heart. After entering the hospital she daily became more debilitated; respiration more embarrassed; the tracheal râle set in, and she died at last of pulmonary disease.

Post mortem. Cranium—1st. Left hemisphere.—On a level with, and external to, the posterior extremity of the corpus striatum, entirely at its apex, there is a softening of the cerebral substance: the portion softened is of a greyish colour.

2nd. Right hemisphere.—At the junction of the anterior and posterior half of this hemisphere, at an equal distance from its internal and external edges, and at the point of junction of the two upper thirds with the lower third of the nervous mass, situated above the centrum ovale of Vieussens, there is a softening similar in every respect to that of the opposite side. Small serous cysts scattered in great numbers through the choroid plexus.

Thorax.—Heart large; parietes of the left ventricle very thick; the right and left cavities filled with black blood, which has the consistence of currant jelly. Bony incrustations in the aortic valves, and over the entire extent of the aorta; large quantity of serum in pericardium and right pleura; the right lung presents, towards the inferior part of its upper lobe, a portion of its tissue, the size of an orange, exhibiting all the characters of pulmonary apoplexy.

Remarks.—This case is well adapted to invalidate certain opinions published in later times. Thus, the only cerebral phenomenon which existed was loss of speech, and the only lesion of the brain discovered was not seated in any of the points of the encephalon, to which the faculty of speech has been assigned.

CASE 18.—*Softening of the left corpus striatum—Loss of speech—Hemiplegia—Preservation of the intelligence.*

A woman, seventy-three years old, had enjoyed good health, in particular never complained of headach, when suddenly, without loss of consciousness, she felt her right leg become flexed under her, and she fell. On being taken up, she was found paralysed on the right side. Two days after she was brought to the La Pitié: the two extremities of right side deprived of motion; patient *cannot speak;* intelligence perfect; when asked whether she has pains, she puts her hand to the right side of the face; tongue inclines to the right. After having been bled twice without any benefit, and signs of pulmonary engorgement coming on, she died in a state of asphyxia.

Post mortem. On the right and near the great interlobular fissure, a fibrous body, the size of a hazel-nut, was imbedded in the dura mater. The large veins passing between the circumvolutions gorged with blood; pia mater injected. The only alteration in the encephalon is in the corpus striatum of the left side, which has lost its natural consistence.

Remarks.—The seat of the softening here is worthy of remark; it is exactly limited to one of the corpora striata, which does not prevent both extremities from being paralysed, together with loss of speech.

CHAPTER V.

CASES IN WHICH, WITH DIVERS DISTURBANCES OF MOTION AND SENSATION, THERE WAS DISTURBANCE OF THE INTELLIGENCE.

The cases next to be considered are naturally divided into two groups; in the first we shall find cases, where the intelligence is entirely destroyed in a manner quite instantaneous. The patients deprived of consciousness are plunged into a state of coma more or less profound. In such cases, the softening of the brain bears the greatest resemblance to hemorrhage of this organ. A second group presents us cases altogether different: namely,—of individuals, in whom the coma, when it does exist, comes on but gradually; their intelligence is not suddenly destroyed, as in the preceding class, but it is perverted, or merely weakened, and they present, as a prevailing phenomenon, a delirium variable in its intensity and its forms. In cases of this kind, softening of the brain differs very widely in its symptoms from hemorrhage, and on the contrary, it approximates, in certain respects, to some forms of inflammation of the meninges.

ARTICLE I.

SOFTENING OF THE BRAIN, WITH COMPLETE AND SUDDEN LOSS OF CONSCIOUSNESS.

Case 19.—*Weakness of the right extremities of an old standing—Suddenly a fall with loss of consciousness—Coma—Softening of one entire hemisphere.*

A man, forty-seven years old, felt, for the last two years, a pain in the left side of the head, and since about the same period, the extremities of the right side were weaker than those of the left. Suddenly, after complaining of his head more than usual, he fell to the ground, deprived of consciousness. After two days he was brought to the La Charité, where he presented the following state:—Profound coma; respiration stertorous; sense of hearing seemed gone; on raising lids, globe of the eye fixed; pupils contracted; sensibility of conjunctiva seemed gone; face very red, and as if swollen; mouth deviated to left side; four extremities relaxed; when raised they fell back as inert masses; sensibility seemed quite abolished; pulse very small, not frequent (bleeding, blisters to legs). He died the next day.

Post mortem. Cranium.—A striking difference in the size of the two hemispheres, that of the left side occupied much more space than the other, so that the great interlobular fissure was no longer on the median line, but was thrown to the right of this line; the circumvolutions of the convexity of the left hemisphere flattened. A very little distance beneath them the cerebral substance became extremely soft; a little lower still it was converted into a greyish bouillie. The same state of diffluence was observed in all the rest of the hemisphere, nearly to its base. In all this softened mass no effusion of blood; it was crossed in different directions by vessels, whose parietes retained their natural consistence.

Thorax.—Great infarction of the lungs; heart very large; hypertrophy of its parietes; contraction of the aortic orifice; its valves as it were soldered together.

Abdomen.—Liver gorged with blood; injection of the gastro-intestinal membrane.

Remarks.—In none of the preceding cases have we seen such extensive softening. Here the intensity of the lesion is conformable to the severity of the symptoms.

The patient presented all the phenomena of abundant cerebral hemorrhage. The resolution of the four extremities explained by the pressure of the tumefied left hemisphere on the other. Could any one have inferred from the state of the patient on his admission the real nature of his disease? We think not. But valuable assistance might have been furnished by the previous history. This person, be it recollected, had for a long time back, weakness of the extremities, and pain in the left side of the head. Such phenomena were connected much more with the idea of softening than of hemorrhage. It is probable that this softening, slowly formed, remained confined to a small extent of the left hemisphere up to the day the patient fell deprived of consciousness. Here again we have softening without hyperemia, for we must not refer to a state of sanguineous congestion the vascular network which appeared in the middle of the nervous mass. This network was the natural state. It is truly remarkable to see, whilst the nervous substance all around is reduced to an almost liquid state, the vessels traversing it, and which must participate in its life, preserve their normal consistence—an admirable example of the independence of the vital action of different tissues, though confounded in one and the same organ. Thus may be explained why a softening, however considerable, does not necessarily bring on a hemorrhage.

CASE 20.—*Pain of head of the right side, with numbness of the left extremities for some days, then sudden loss of consciousness—Hemiplegia on left side—Softening of the middle part of the right hemisphere.*

This was the case of a woman, sixty-six years of age, who complained of an acute pain in the right temple; her left extremities seemed benumbed and heavy. After about a week her pain of head increased; her right leg bent under her, and she was put to bed; a little after she was seen to put her hand to her head, and a little after she was deprived of consciousness. Some hours after she was brought to hospital: her state then was—Profound coma; total insensibility to external impressions; extremities of left side when raised fell again as inert masses; respiration stertorous; pulse hard, seventy-two; she died in the night.

Post mortem. On the level of, and outside, the optic thalamus of the right side, there was considerable softening to an extent capable of admitting an orange; this softening reached the posterior third of the corpus striatum, and a part of the optic thalamus.

Remarks.—There was great resemblance between this case and the preceding: in the former the headach, which announced the cerebral disease, lasted for two years, whilst in the second it did not extend beyond a few days. In the latter case also, there was no hemiplegia, which is accounted for by the smaller extent of the softening, which did not, as in the first case, exert any influence on the sound hemisphere.

CASE 21.—This was the case of a porter, who had been exposed for some time to the vapour of charcoal, after which he suffered for three or four days dizziness and pain of head; the dizziness went off, but the pain became concentrated towards the region of the left parietal bone; about a month after he fell down suddenly, deprived of consciousness and motion. The case bore a great resemblance to the preceding two.

CASE 22.—*Debility of the right extremities of long standing—Sudden loss of consciousness—Hemiplegia on the right side, and contraction on the same side—Convulsive movements and cataleptic phenomena of the left side—Softening in each optic thalamus.*

A man, seventy-seven years old, full habit, complained for a long time of the right limbs being weaker than the left; one morning he suddenly lost all consciousness, and was conveyed to the hospital, where he presented the following symptoms ;—Incomplete hemiplegia of the right side ; left arm agitated with involuntary movements ; face flushed, expressive of stupor ; eyes closed ; left pupil slightly dilated, and the right contracted ; sense of hearing impaired ; tongue protruded with difficulty, deviates a little to the left ; pulse frequent and small ; respiration embarrassed ; he was bled twice the first day of his admission, and had sinapisms to his legs ; after two days he seems better ; respiration easier ; tongue more easily protruded, and deviates less ; he wishes to speak, but we hear only inarticulate sounds ; pulse accelerated, small, a little more developed in the right ; the arm of this side performs some weak movements ; fore-arm flexed ; fingers also slightly so ; the left arm having been raised by mere chance, then left to itself, it was observed that it retained the various positions which had been given to it for a very considerable time ; the lower extremity of the left side did not exhibit this cataleptiform state. In two days after he seems still better ; stupor less ; opens his eyes and speaks ; answers questions accurately ; catalepsy of the left arm diminished. On the next day return of the stupor ; pulse small ; right arm performs some movements and presents no signs of flexion ; left arm now contracts with force when we wish to move it ; all the symptoms becoming worse : he died in a few days.

Post mortem. Strong adhesions between the dura mater andcranium ; membranes covering the anterior and middle part of the cerebral hemispheres thickened and a little opaque. In each of the hemispheres the following alterations were discovered :—1st. In the left hemisphere, the posterior and middle part of the optic thalamus presented a softening the size of a hazel-nut—here the cerebral pulp was converted into a yellowish bouillie. 2nd. In the right hemisphere, the optic thalamus presents a softening of small extent towards its internal posterior part ; in the centre of the softening, a small quantity of blood infiltrates the nervous pulp.

Remarks.—Here at first view it is difficult enough to connect the symptoms during life with the lesions found after death. It is probable that the gradual debility of the right side, which preceded the loss of consciousness, depended on the process of softening, which had already commenced in the left optic thalamus. This weakness was converted into paralysis, the same day on which the coma supervened ; and soon after this paralysis became complicated with flexions of the limbs. This succession of phenomena indicates a progress in the softening of the left optic thalamus ; and if, subsequently, the contraction disappeared, if the paralysis itself diminished, so that the patient became able to perform some movements with the right arm, we must thence conclude that the process of softening was arrested in the left optic thalamus, or that the inflammation accompanying it had become less intense. So far every thing is very well explained, but such is not the case with other phenomena, of which we have now to speak. What was the cause of the convulsive movements of the left arm, and of the cataleptiform state it subsequently presented ? Was it the softening, with sanguineous infiltration found in the right optic thalamus ? We do not think so ; for then the arm would not have recovered its movements. We think that the last mentioned phenomena depended on the partial meningitis, which was proved to have existed. It seems probable that the softening of the right optic thalamus took place only at a late period : to it we would refer the return of the coma, and the rigidity of the left arm the day before death.

CASE 23.—*Sudden loss of consciousness and motion—Momentary return of intelligence—Delirium at intervals—Pain of head—Softening of one of the corpora striata.*

A woman, forty-seven years old, was suddenly seized with violent pain of head and dizziness : she could not sustain herself on her legs, and staggered as if drunk.

After some hours she lost all consciousness; she recovered a little in half an hour, but was paralysed on the right side; she was brought to the La Charité; we saw her about fifteen hours after the first attack; intelligence weak; still she could understand and answer our questions; she gazed at us with an astonished air; when asked if she suffered pain any where, she pointed to the head; articulation difficult; mouth dragged to left; both extremities of the right side wholly deprived of motion; sensibility of the skin covering them impaired. For the twenty days following, she continued nearly in the same state; only, occasionally, her intelligence became disturbed; memory gone; constantly complained of pain at the left side of the head; she became emaciated; appetite gone; a large eschar on the sacrum; tongue dry; fæces discharged involuntarily; she died in an adynamic state about forty-eight days after her admission; delirium constant for the last eight days of her life; she had been bled twice after entering the hospital, blistered at the nape of the neck, and some purgative mixture given her.

Post mortem. Pia mater covering the convexity of the hemispheres infiltrated with a considerable quantity of turbid serum; the arachnoid was raised from it; a similar liquid filled the left ventricle; left corpus striatum occupied by a softening about an inch and half in length, and one inch in breadth. In the centre of this softening, which was of a yellowish colour, were seen three small red points. All the corpus striatum was in general softer than on the opposite side, and the cerebral substance around it, for the extent of some lines, had also less than its natural consistence.

Remarks.—The time which elapsed, in the case of this individual, between the first cerebral phenomena and the loss of consciousness, was shorter than in the others. These phenomena were such as characterise cerebral congestion. The paralysis was not ascertained till after the loss of consciousness. The latter was of less duration than in the preceding cases. When the patient came to herself, her intelligence was still somewhat impaired, and embarrassment of speech was one of the prevailing phenomena. We call attention to this delirium, which manifested itself at a subsequent period, at first by intervals, and then in a continued manner. Was this connected with the state of the meninges? Shall we find it accounted for in the turbid liquid which infiltrated the pia mater, and which filled the ventricle situated on the side of the softening? At no period of the disease did we find contraction in the paralysed limbs.

CASE 25.*—*Somnolence at first; at a later period, momentary loss of consciousness, followed by hemiplegia—Death by heart affection—Softening of the optic thalamus and corpus striatum of the right side—Tubercular affection of the testicles—Aneurism of the heart.*

A man, forty-three years of age, felt, for several years back, an habitual oppression, which increased on every muscular effort. For the last year, the dyspnœa increased very much; and for the last few months he perceived his left testicle to become very large. When he entered the La Charité, we were at first struck with the pale yellow tint of his face. He lay on his back in bed; scarcely felt any dyspnœa when he abstained from motion; sleep tranquil enough; frequent attacks of dizziness. The hand, applied to the præcordial region, distinguished the beatings of the heart but very obscurely. When heard with the stethoscope, they were very irregular and tumultuous; they were heard but very slightly along the sternum, and on the right anterior side of the thorax. Pulse very small, irregular, occasionally imperceptible. We shall see how far these signs were from indicating the state of the heart. The patient presented no change in his state during the first month of his stay in the hospital. At the end of this time he was observed to have a great tendency to stupor. Soon after he remained in a continued state of somnolence. However, he was easily aroused, and then his intelligence was clear; his movements were quite free. We asked him frequently whether he had pain of head, and he always answered in the negative. Respiration not more constrained than usual. This state of somnolence continued for three or four days, when one morning we were struck with the change in his pulse; it was small till then, but now became full and very hard; skin unusually hot. During the night he suddenly lost consciousness; he recovered it in about a quarter of an hour. On the next morning the left extremities, hitherto so free in their functions, were now deprived of motion; the sensibility of the skin of these parts impaired; right commissure of the lips drawn up, and at each expiration the left cheek is distended with air. In two days more the respiration became suddenly more difficult, and in about forty-eight hours he died, after having passed through all the degrees of asphyxia.

---

* We omit the 24th, as containing nothing very different from the preceding.

Post mortem. Cranium.—On the right side the corpus striatum and optic thalamus no longer existed. In their stead was found a soft white substance slightly rose-coloured in several points, yellowish in others. This morbid change reached, to the extent of from one to two inches, the nervous substance which bounds externally the corpus striatum from the optic thalamus.

Thorax.—Lungs infiltrated with a prodigious quantity of frothy serum. Heart of an enormous size, owing both to dilatation of its cavities and hypertrophy of its parietes. Not far from its apex, for a space equal to the size of a five franc piece, the parietes of the left ventricle became suddenly very thin, scarcely equalling the auricles in thickness. In this part there existed interiorly a sort of pouch like the aneurismal sac of arteries; parietes of right ventricle equally hypertrophied; an enormous clot, of great density, filled its cavity, and extended into the auricle; it adhered intimately to the arneæ columnæ of the ventricles. Was it formed during life? Had it any share in the production of the asphyxia? Aorta very large.

Abdomen.—Liver gorged with blood; intestinal mucous membrane generally injected; a limpid colourless serum effused into the tunica vaginalis of the right side; in the testicle of this side were found five or six small cavities filled with a substance like softened tubercular matter.

Remarks.—Before the autopsy, what physician would not have admitted, in this case, the existence of cerebral hemorrhage? All the symptoms appear to indicate it. The individual was affected with organic disease of the heart, and was for a long time subject to dizziness. There was a commencement of cerebral congestion; then stupor comes on, indicating a more serious degree of this congestion; it lasted about five days, and terminated in sudden loss of consciousness, which is but momentary, and left a hemiplegia behind it. Might not one suppose that the simple congestion was succeeded by an effusion of blood? This opinion seemed to derive new support from the absence of all headach, as of all contractions of the limbs. It was also strengthened by the consideration of the remarkable change the pulse underwent some hours before the attack; yet it was simple softening that existed.

The loss of consciousness was momentary, as in several of the preceding cases; but whilst in the latter, different disturbances of the intelligence followed more or less immediately the return of the patients to consciousness, here, on the contrary, the intellectual faculties remained to the last perfectly intact. The affection of the brain no longer manifested its existence, except by the continuance of the hemiplegia: somnolence even, which preceded the loss of consciousness, no longer showed itself. Was it the influence of the cerebral disease which concurred in the production of the pulmonary œdema, of which the patient died? We should be inclined to think so.

We may here say one word of the remarkable lesion of which the heart was the seat, of that partial softening of the parietes of the left ventricle, which contrasted so strikingly with the increase of thickness, which these parietes exhibited in the remainder of their extent.

With respect to the symptoms of the affection of the heart, they certainly are worth remarking, if we compare them with the nature of the lesions discovered in this organ after death. The hand and ear applied over the region of the heart discovered no impulse there, notwithstanding the very great impulse which existed. The extent of the pulsations was not considerable, though the right and left cavities were very much dilated. There was no obstacle, either at the origin of the aorta, or at the left auriculo-ventricular orifice, no contraction there; nothing, in a word, which could explain the irregularity of the pulsations of the heart and arteries; nothing either, which could account for the extreme smallness of the pulse. This smallness depended certainly less on a material lesion appreciable by the scalpel, than on the manner of the heart's contractions, since it ceased altogether the day the patient was struck with apoplexy. The great fulness of the pulse then, which contrasted so remarkably with its thready state the preceding days, was in some way the precursor of this attack.

This case closes the series of those in which the sudden loss of consciousness was one of the predominant phenomena of cerebral softening. In all the cases which we have cited, loss of consciousness was not the first symptom which announced the affection of the brain. It was preceded by different symptoms, such as pain of head, dizziness, weakness of the limbs, paralysis, disturbance of the intelligence, stupor. These phenomena preceded the loss of consciousness sometimes by some moments only, sometimes by several months. The loss of consciousness itself lasted but for some minutes, or was prolonged for several days. After it the paralysis which had preceded it was increased; or if this paralysis had not existed previously, it was seen to supervene. In several of our cases, the loss of consciousness continued till death; in others it ceased a longer or shorter time before the last moment; and then sometimes the intelligence re-appeared in all its perfection, either for a continuance or temporarily; sometimes the patient recovered his senses only to fall into a delirium, which a little after terminated in a state of coma.

ARTICLE II.

SOFTENING OF THE BRAIN, WITH WEAKNESS OR PERVERSION OF THE INTELLIGENCE.

CASE 26.—*Apoplectic attack four years before death—Complete recovery—Hemiplegia supervening suddenly after some days of violent headach—Delirium.*

THIS was the case of a man seventy years of age; the precursory symptom in this case was an acute pain in the left side of the head, and painful numbness in the right hand, and staggering in his gait. After a fortnight, he was found one morning in a lethargic sleep; on awaking, he was delirious, unable to articulate, and had hemiplegia of the right side. The latter diminished gradually, but the delirium continued till he died, which was thirteen days after the lethargic stupor was observed.

The morbid appearances discovered after death were very inconsiderable, considering the symptoms; on the level of and external to the corpus striatum of the left side, there appeared a reddish spot the breadth of a franc. Here the tissue of the brain was quite soft, and looked as if some red colouring matter were mixed up with it. The left ventricle of the heart was hypertrophied.

CASE* 28.—*Delirium—Contraction of the limbs of the right side—Coma—Red softening of one of the hemispheres—Acute hydrocephalus—Dryness of the arachnoid.*

A man, nineteen years old, fell from a height of five or six feet, about fifteen days before his admission to the Maison de Santé. No bad symptom resulted at the moment; but a few days after, he felt uneasiness, general lassitude, and occasional shivering. After eight days passed on, he felt pain of head, and soon became delirious. He was bled, and had leeches to epigastrium; delirium and fever still continued. Four days after the latter symptoms appeared, he was admitted to the Maison de Santé; he then presented the following state:—Rapid alternations of coma and agitation; face injected; flexion of the right upper extremity; the hand also flexed on the fore-arm of this limb, and the fore-arm on the arm; pulse ninety-six; respiration stertorous; tongue moist; abdomen soft (twenty leeches on each side of the neck, a blister to the nape of the neck, sinapisms to the lower extremities, some purging mixture).

Next day, continual coma; vision gone; pupils moderately dilated; froth at the mouth; face injected; strong flexion of the upper extremity; right leg equally flexed on the thigh; occasionally some convulsive movements in the flexed upper extremity; cutaneous sensibility of both sides of the body destroyed; respiration very stertorous; pulse 140 (ice to the head, sinapisms to the lower extremities, twelve grains of calomel).

During the day, state of coma increases; pulse so frequent and small, that it cannot be counted; respiration more and more embarrassed, and the patient died in the night.

Post mortem. Cranium.—Remarkable dryness of the free surface of the arachnoid. Anterior to the left corpus striatum was a softening capable of containing a hazel-nut; this softening presented a well-marked tint. The ventricles were distended with an enormous quantity of serum, clear as rock water. The fornix and septum were reduced to a white diffluent pulp.

Thorax.—A great number of crude tubercles in the lungs: a quarter of a glass of limpid serum in the pericardium.

Abdomen.—Tubercles in spleen, which is dense and small in size; slight injection of the villous coat of the stomach; small intestine pale; red patches in the cæcum and ascending colon.

Remarks.—Without seeking to establish how far there was a connection between the fall, which had happened to this person, and the disease of which he died, we shall merely observe that the first morbid phenomena occurred immediately after the fall. These phenomena did not at first seem to be the result of a cerebral affection; it was, in fact, a mere febrile disturbance, without any well-marked local symptom. At first, this young man experienced fatigue, and a degree of uneasiness, which constitute the precursor of the most different diseases; but very soon symptoms appeared, which more directly developed the affection of the encephalon; however, the headach and delirium which complicated the fever, did not yet prove sufficiently that the disease had its principal seat in the nervous centres; for how often do not similar phenomena present themselves as the purely sympathetic result of the affection of another organ, and particularly of the intestine? Such was also the opinion of the physician who first attended this person, since, after bleeding him from the arm, he applied leeches to the epigastrium. Again, could these alternations of profound coma, and convulsive agitation which the patient presented on his admission, have afforded us a certainty, that the brain was the organ particularly suffering? Certainly not; for, in many cases, these phenomena are referrible to a gastro-intestinal inflammation. However, the natural appearance of the tongue should be taken into serious consideration, in order to establish the diagnosis: this might afford good ground for our presuming that we had not to do with a gastro-enterite, a dothinenterite, a typhoid lesion, and if the seat of the evil were not in the primæ viæ, we should conclude that it was in the brain. The flexion of the limbs of one side gave much greater weight to this opinion; for this phenomenon is scarcely ever produced in consequence of a merely sympathetic suffering of the brain. In the brain then the principal seat of the disease was; but what was its nature? Was there simple meningitis? To this inflammation of the cerebral membranes might be referred the delirium and coma, convulsive agitation, and the modifications of the general sensibility, the loss of vision, &c. But this well-marked flexion of the limbs, limited to only one side of the body, seemed to announce a lesion of the nervous substance itself; if this lesion did exist (and for our part we think it very likely), it could scarcely be any thing else than softening of an inflammatory nature. To sum up, there must be, in this case, meningo-encephalite. The autopsy warranted this mode of viewing the matter; the red softening of a small portion of the cerebral substance had a very different appearance from those white softenings, of which we found numerous instances in the preceding cases. The particular dryness, of which the arachnoid was the seat, was certainly not a normal state of this membrane, and we know that in most inflammations there is a period at which the secretions are suppressed. The great quantity of limpid serum which filled the ventricles, must also have performed a part in the production of the symptoms. Again, the dryness of a serous membrane could not be an unanswerable proof that it was inflamed. In order that it should cease to exhale its usual fluid, would it not be sufficient, that a great quantity of serum should be suddenly separated from the blood, in other points of the system? Is not that what happens in cholera, where, on opening the bodies, several great serous membranes are also found extremely dry? We would conceive, also, that in consequence of this unusual dryness, the organs enveloped by these serous membranes might be embarrassed in their functions, whence might result various symptoms falsely attributed to an inflammatory state. Nor is it impossible that certain states of the innervation might have some influence in the dryness of the serous membranes. Does not a mental emotion suddenly deprive the buccal mucous membrane of its usual moisture?

---

* Case twenty-seventh omitted, as containing nothing of particular importance.

CASE 31. — *Progressive disturbance of the intelligence terminating in complete delirium—Hemiplegia—Flexion of the paralysed limbs—Softening of one hemisphere.*

An Irishman, thirty-two years of age, good constitution, having recently undergone treatment for syphilis, when it was observed that his intellectual faculties were weakened, and his memory in particular impaired. By degrees his intellect became so dull, that he could express himself only with considerable difficulty. He was bled without any amendment. His friends then entreated me to admit him into my wards; I saw him for the first time the 12th of May; he presented the following state:—The patient lay on his back, and answered the questions put to him with great difficulty; he complained of an acute pain in the head without being able to tell its precise seat; pulse eighty-four, and respiration sixteen every minute. Tongue white and moist. (Bled to sixteen ounces.)

The blood drawn from the vein collected into a small clot, surrounded with much serum, without being buffed.

All the night he raved; strait-waistcoat put on him. On the 13th, the agitation of the night succeeded by a state of somnolence; from time to time he opened his eyes, and looked with a stupid air at all around him; answers slow and difficult; he said his headach was diminished; the fingers of the hands, both right and left, were agitated by slight involuntary movements, and there was n other appreciable disturbance in the locomotive faculties than this spasm of the fingers just mentioned; respiration stertorous, as in apoplectic patients; we counted twenty movements of inspiration each minute; pulse sixty-eight instead of eighty-four. (Twelve grains of calomel.)

Vomited severely after taking the calomel; no alvine dejection; raved all day.

The 14th, in the morning, the delirium continued, but calm; he pronounced some inarticulate words, but in a low voice; he constantly held the right arm outside the bed, and gave it different movements, which seemed directed towards laying hold of some object; the right leg moved also, and he endeavoured to put it outside the bed; such was not the case with the two extremities of the left side; they remained immoveable along the trunk; when the skin of these extremities was pinched, it was those of the right side that moved; the expression of the countenance then indicated that the sensibility continued; we raised the left arm and it fell back but slowly, as if still sustained by a remains of muscular action; he made no resistance to the movements of flexion and extension which we attempted to make it perform, but the muscles of this limb were agitated by slight convulsive twitches, which resembled a species of undulation beneath the skin; pulse now ninety-six, and small; twenty-four respirations each minute. (Two blisters to the thighs.)

On the 15th, the left extremities exhibited a rigidity which they had not the preceding day; the fore-arm of this side was flexed on the arm, and it resisted the efforts made to extend it; we thought bleeding might still be borne; forty leeches were applied to the base of the cranium.

On the 16th, the patient no longer exhibited any signs of intelligence; his eyes, usually shut, were opened occasionally, and fixed with a stupid air towards some of the surrounding objects; he directed his right arm towards them, which preserved all its mobility; the left upper extremity, deprived of motion, was still more flexed than on the preceding day, as was also the left lower extremity; the sensibility appeared more impaired on the left side of the body than on the right; pulse 128; respiratory movements twenty-four; pulsations of the heart extended over the entire chest; the respiratory murmur everywhere strong and clear; the subcutaneous veins very much swollen; skin, still warm, covered with sweat; constipation.

In the course of the day were observed constant alternations of great agitation and profound coma; he died at midnight.

Post mortem. Cranium.—Membranes slightly injected. An immense softening in the right hemisphere, commencing at the circumvolutions of the posterior and middle lobes, and extending in depth to near the base of the brain. The optic thalamus and corpus striatum both reduced to a bouillie. This softening, in its entire extent, presents a dull white colour in some points, and yellowish in others; no appearance of any thing like effused blood or infiltrated pus. Very few vessels pass through it; those observed in it are but the vessels of the normal state, the tissue of which is still preserved intact amidst the breaking down of the nervous substance. The left ventricle contains a tea-spoonful of reddish serum.

Thorax.—A glass-full of brownish serum in the left pleura; considerable infarction of the lungs; some marks of pulmonary apoplexy in the inferior lobe of the right lung; sanguineous suffusion under the pleura of the same side. Heart hypertrophied; parietes of the left ventricle thirteen lines in thickness; those of the right ventricle four lines, and the septum nine lines.

Remarks.—The disturbance of the intellect was for a long time the prevailing symptom, more even than in any of the preceding cases; it even showed itself without the complication of any other functional disturbance. This disturbance of the intellect was established but imperceptibly; it was gradually weakened. At the time we saw the patient, there was not yet any delirium; but it soon manifested itself, not to cease again, coinciding with alternations of violent agitation and profound coma. It was but consecutively to all these disturbances of the intelligence, that motion itself began to be disturbed : the first phenomenon which apprised us of it was small convulsive twitches, extending to the two sides of the body. But characteristic symptoms soon appeared : these symptoms were paralysis of the left extremities, convulsive agitation of the muscles of these limbs, rigidity and ultimately flexion of them ; the latter continued till death. Then the most characteristic sign of softening did not appear till the close of the disease. This softening was one of the most considerable we have had an opportunity of seeing. Did it commence at the circumvolutions ? Was it in consequence of this circumstance that the disturbance of the intelligence marked the commencement of the disease ?

In this case, as in the preceding, the membranes were not affected. These two cases also resemble each other in this, that in both, the softened parts were not the seat of any sanguineous congestions.

If we now direct our attention to the manner in which the different functions of the life of relation were performed, during the course of this disease, the following remarks will present themselves to us : the tongue was constantly in its normal state ; a circumstance which, from the very commencement, should lead us to refer the delirium to an affection of the encephalon, and not of the digestive organs ; the calomel, administered once in the dose of twelve grains, made the patient vomit, and did not remove the constipation. The pulse, a little accelerated at the time of the patient's admission, became slow on one day ; then it became more and more frequent till death. The very day of his death, there was remarkable energy in the pulsation of the heart. With respect to the respiration, it was less embarrassed, up to the last, than in other individuals, so that no symptom disclosed, during life, the existence of the serious lesions of which one of the lungs was the seat.

We should have observed in the account of the post mortem, that there was considerable softening of the mucous membrane of the stomach, which extended to the subjacent tunics. Did this exist during life ? Was it not rather a phenomenon which took place after death ? With respect to this matter, here is an extraordinary fact ; this person and three others were opened within a few days of each other, whilst the temperature was very high. In these four, who died of very different diseases, we found the great cul de sac of the stomach softened to that degree, that the slightest drawing of its parietes produced a laceration of them. Some days after the temperature fell, and we found nothing similar in the other bodies we opened.

CASE 33.—*Gradual weakening of intelligence and motion—Several parts of the two hemispheres softened.*

A man, sixty years old, was attacked, for the last year, with paralysis of the left side, which came on gradually, not preceded by any loss of consciousness. Simultaneously with the paralysis, the intelligence became weakened, and he gradually fell into a complete state of childishness ; at which time he entered the La Pitié. After a little his respiration became hurried ; fever developed itself ; tongue dry ; in the inferior lobe of the right lung we detected intense inflammation, which was not removed by bleeding and revulsives ; and death soon followed.

Post mortem. The right hemisphere of the brain the seat of two softenings ; one in one of the circumvolutions of its posterior lobe (at the base) ; the other immediately behind the ancyroid cavity, one inch and half in diameter ; these two softenings present a reddish colour. In the left hemisphere there is a third softening, seated in one of the circumvolutions of the middle lobe (upper surface) : this softening presented a reddish tint, such as the two others ; ventricles distended by a great quantity of limpid serum ; pia mater on the convexity of the hemispheres infiltrated with serum equally limpid; this fluid raises the arachnoid, which is separated by it for several lines from the cerebral substance; there is serum also within the great cavity of the arachnoid.

Thorax.—Red hepatisation of the inferior lobe of the right lung.

Remarks.—Here again the intelligence and power of motion were weakened gradually, and from the commencement the disease presented the form and course of a chronic affection. The parts of the brain softened were injected in this case. Now, in other cases, we have seen this co-existence of hyperemia and softening connected with an acute form of the disease. The most remarkable circumstance is the number of softened points in the cerebral hemispheres, and also the existence of a small softening confined to a circumvolution of the left hemisphere, without there being, during life, any lesion of motion in the right extremities.

SECTION II.

RECAPITULATION.

In showing us softening of the brain under all its forms, both anatomical and symptomatical, the preceding cases have also shown us, how far from being easy is the diagnosis of this affection in many cases. The study of these particular facts seems to us to be of extreme importance, by reason of the different aspect under which each of them presents the disease to us. How could a general description point out sufficiently all these individualities? Each fact has really a physiognomy of its own, and requires to be closely examined. In each of them it is not only the symptoms that are not the same, but again, it is that there are similar symptoms, which are connected together, or succeed each other in the most different manner; thence result, for one and the same anatomical lesion, several morbid forms which, in a nosological system, might be placed at a great distance from each other; in some cases there is what is called an attack of apoplexy, with or without loss of consciousness; in others, it is a fever called ataxic; at other times it is a gradual diminution, either of motion only, or simultaneously of intelligence and motion. See also how different are the modifications which the latter may undergo; complete or incomplete paralysis, convulsive movements, partial or general, contraction, tetanic rigidity, limited to some muscles, or extending to all the body, &c. How could you attain a perception of all these shades, if not by the study of the particular facts which represent them? And add again, that some of these will show you cases, where not only the softening has no longer the symptoms which ordinarily occompany it, but in which there is not even a symptom which announces any lesion whatever of the nervous centres; so that sometimes the softening of the brain remains a lesion entirely latent. However, we should not confine ourselves to the mere consideration of these particular facts; we should endeavour to possess ourselves, as far as possible, of the traits by which they differ, those in which they resemble each other, and thus derive from our study of individualities general consequences. But however extensive these generalisations may be, let us not flatter ourselves that they ever can take in the infinite variety of facts; thence the necessity of recurring to them constantly, and of constantly interrogating observation, which alone can either enlarge or rectify our points of view.

We have seen, in the preceding cases, that softening of the brain is far from presenting itself always on the dead body with the same anatomical characters. These characters are, at times, so different, that they seem to indicate a difference in the nature of the lesion. There are, first, some cases, where the only change we can discover in the nervous substance, is the diminution of consistence; it appears that either all at once, or gradually, it returned, in a certain part of its extent, to the almost liquid state which, during fœtal life, constituted its normal state. It has, besides, its ordinary colour; and we may still distinguish, by their different tints, the grey substance and the white substance. At times, only, we see this softened part pervaded by a certain number of vessels; but their presence is not a pathological state; it is merely the vascular woof of the normal state, which remained intact in the midst of the softened pulp in which it was plunged. But this vascular woof, itself, is very far from being always distinguishable: there are cases where, far from being more coloured than usual, the part which has lost its consistence is, on the contrary, remarkably pale; it no longer contains a drop of blood; its vessels have disappeared. This loss of substance may be appreciated in the grey substance particularly, which, in more than one case of softening, can no longer be distinguished by its colour from the white substance adjacent to it.

This loss of colour, noticed by M. Lallemand, was considered by him as the product of an infiltration of the cerebral substance by purulent matter. In several cases there is nothing to prove that it is so. When the softened parietes contain pus, they have a different aspect, and it is easy to recognise it, as we shall presently see.

Here then, already, are two cases which, in reference to anatomy, should be distinguished from each other. In the first of these cases, the softening is the only morbid element; in the second, another is added to it, namely *a state of anemia:* it is, consequently, an element the inverse of those which constitute inflammation.

Then there comes another case, frequent, no doubt, but much less so than has been said: it is where a state of hyperemia complicates the softening. The portion of nervous substance, which has lost its consistence, then presents different degrees of injection, from whence results a red colour more or less intense. Sometimes this red tint is general; sometimes it is scattered in points, more or less approximated, through the entire extent of the softening. In place of this simple injection, it may happen that we find within the softening real effusions of blood, variable in size and number.

Instead of being penetrated by a superabundant quantity of blood, the softened part may become the seat of a morbid secretion, which is sometimes simply serous, and sometimes purulent. In the first case, we find the nervous pulp soaked, as it were, in a more or less turbid serum, which holds suspended whitish or greyish flocculi, the only fragments of the cerebral substance which have still preserved any consistence. In the second case, pus of different qualities infiltrates the softened parts, or else unites into cavities, and forms abscesses more or less considerable.

Do these different appearances, which may be presented by softening of the brain, refer to lesions of a different nature? Are they but degrees, more or less advanced, of one and the same disease? It is easy to prove that, in a considerable number of cases, it is first injected, then softened, then secretes pus. This has been excellently well established by M. Lallemand. The softening is then one of the anatomical characters of inflammation of the brain, as it may be of all other organs. But if, in other cases, we do not find within the softening any trace either of sanguineous injection, or purulent infiltration; if we find there, in a word, no other alteration but softening itself, will it not be an abuse of analogy to conclude that in these cases also, the cause which has deprived the brain of its consistence is inflammation? A fortiori, will not one be induced to admit it in those other cases where the softened part has become, at the same time, the seat of an anemia? Observe, besides, that among these cases of white softening, there are some which have formed very rapidly, after the manner of acute diseases, and in such cases it cannot be supposed that the softening has commenced by a sanguineous congestion, which would disappear, according as the affection would assume a chronic course. No doubt, those who refer the proximate cause of every disease to a defect of the normal stimulation, must necessarily make cerebral softening enter into one or other of these states, and not finding in this alteration the characters of an asthenic disease, they must regard it as an inflammation. In thinking so, they but follow their theories; but for us, who think that in a crowd of morbid states, there is no more hypersthenia than asthenia, but mere perversion of the vital actions, we are no more obliged to consider the cerebral softening, or any other softening, as an inflammation, than tubercles as pneumonia. It is a specific alteration of nutrition which may supervene under the influence of morbid conditions widely differing from each other. To endeavour to determine these different conditions is the task to be performed, a task difficult, no doubt, but of quite another importance from that on which medical men have occupied themselves in latter times, when they have wished to reduce every cerebral softening to one of the forms, or one of the degrees of inflammation of the nervous centres. We are convinced that by proceeding thus men have entered on a course diametrically opposite to that which should lead to the truth. We, too, might collect groups of facts to demonstrate that softening is capable of being produced by different causes of inflammation. Thus, we might find one group of facts from which it would result that commencing obliteration of the arteries which enter the brain, is one of the conditions which concur in the production of a certain number of softenings. We might cite other facts which would show us a remarkable coincidence between the *impoverishment* of the blood, or any other alteration whatever of this liquid, and the softening of a great number of our tissues. Are there really so many causes of softening? The future will decide, and will discover, no doubt, many other causes, which, in the present state of our knowledge, we cannot even suspect. All that we affirm is, that it is necessary to seek elsewhere than in inflammation for the cause of all softenings. It does not even seem to us that the presence of an unusual quantity of blood in the midst of a softened tissue, is a sufficient proof that irritation is the cause of its softening. May it not be that this superabundant blood has flowed into these softened parts but consecutively? See the case where after a limb has remained for a long time merely paralysed, it suddenly became rigid, convulsed, and contracted; on opening the body, we often find, in such cases, one part of the brain softened, and at the same time reddened with blood; reasoning may then lead us to admit, that the sanguineous congestion occurred but as a mere complication of softening, and that it is it which caused the phenomena of excitement to succeed the simple loss of motion. In order to explain a cause which simultaneously softened and reddened a tissue, shall we never see any thing beyond the mere fact of an irritation which has acted on this tissue? Is it then in the gums of a scorbutic subject that the cause resides, which has brought them at the same time to a state of hyperemia, and deprived them of their consistence?

Here, no doubt, are very many questions raised, which wait till facts rigorously observed shall come to solve them. But it is enough, we think, that such questions can be put, and that in the future progress of science their solution is possible, to make one mistrust very much the opinion which refers every softening to an inflammation. Because the brain is softened after a blow on the cranium, is that a reason for saying that every time it shall have lost its consistence, it must have been previously irritated?

If science refuse to admit inflammation as the sole cause of softening of the brain, if it see in this softening several other causes, for the proof of which it waits for new researches, it is quite clear that the term encephalitis cannot be used as synonymous with the word softening. Neither do we think it correct, to call this alteration capillary apoplexy, as M. Cruveilhier has done. In a certain number of cases, to be sure, the softening is accompanied, or rather complicated with sanguineous infiltration, or effusions of blood more or less multiplied ; but certainly it is not in the presence of this blood that the essence of the disease consists, and there are at least as many causes in which we do not find the least trace of it. The softening then may be either a capillary apoplexy, or an encephalitis ; but it is not necessarily either the one or the other.

Outside the softened parts, the brain and its membranes do not always present the same conditions. The substance of the brain has ordinarily its usual consistence ; there are cases where it is perceptibly injected ; at other times it is not so ; at other times it is even paler than usual. It may also be tumefied and increased in size ; then the hemisphere where the softening exists presents a singular appearance ; its circumvolutions are, as it were, heaped one upon another, and there are cases where, passing the median line, it acts upon and compresses the hemisphere of the opposite side.

There are other cases where persons affected with softening of the brain, which has already lasted for a considerable time, have died of hemorrhage which took place in another point of the encephalon; an instance of this has been given. With respect to the investing membranes, they often have their physiological appearance ; in several of the cases we have cited, the pia mater was traversed by numerous vessels ; in others a limpid or slightly turbid serum infiltrated it. The ventricles presented to us more than once considerable dilatation, the result of the great quantity of limpid serum which filled them.

These different alterations of the nervous substance, or of its membranes, certainly perform their part in the production of the symptoms which accompany softening of the brain ; they may precede it, be developed simultaneously with it, or only a longer or shorter time after it. The injection of the pia mater, its infiltration by a turbid or transparent liquid, may be general ; but we have seen cases where these changes were partial ; they were limited to the parts of the membranes extended over the points of the brain which had lost their consistence.

There are cases where the most apparent lesion is that of the meninges : in some cases the softening affects only the superficial layer of the circumvolutions ; we must then raise very cautiously the pia mater in order to ascertain this softening : in such cases, portions of the cerebral substance are detached with the membrane. In certain cases of chronic meningitis, the softening does not exist immediately beneath the pia mater ; it occupies the deep plane of the circumvolutions, whilst their superficial plane remains in its normal state, or is indurated.

In what state are the different organs found in individuals who have died with softening of the cerebral hemispheres ? This question is important, whether we wish to establish what are the alterations which this softening may induce in other parts, or whether we wish to seek what are the conditions of the system which most frequently precede softening of the brain.

Only one organ seems to us to receive a direct influence from the cerebral lesion ; that organ is the lungs. We have been struck, in our post mortem examinations, with the great serous infarctions of which the lungs were frequently the seat. It is of the affection of this organ, also, that several individuals die who are affected with cerebral softening. It is to the state of asphyxia in which they die that we must refer the bright redness presented in them by the gastro-intestinal mucous membrane. If we re-peruse, on this subject, the cases already quoted, we shall find accordingly, that the cases in which the lung has been found, after death, most infarcted with serum, are those where we have met most intense hyperemia in the mucous membrane of the intestinal tube ; but this hyperemia was altogether mechanical.

With respect to the organic lesions which existed before the softening, we have met a certain number. We shall present a view of them.

In twenty-one cases the heart presented no appreciable lesion; in nine cases it was aneurismatic; in one case the aortic valves were ossified; in two other cases the heart itself presented no alteration, but the two layers of the pericardium adhered closely to each other by old cellular adhesions. In one of the subjects, whose heart was hypertrophied or dilated, there was at the same time aneurism of the aorta.

The blood did not, in any case, present particular qualities. The lungs were sound, or merely œdematous, in eighteen cases; they were melanosed at their summit in one case; they contained tubercles in seven cases, and cretaceous concretions in two cases; twice they presented traces of recent inflammation (red or grey hepatisation); and other three times we ascertained the existence of pulmonary apoplexy. In the two subjects where this apoplexy was met, the heart was hypertrophied and the lungs infarcted; in one of them we observed, in the sub-pleural cellular tissue, well-marked sanguineous suffusion.

The digestive organs were found exempt from all appreciable lesion in fourteen cases; five times they were injected in different points of their extent; in eight individuals the mucous membranes of the stomach had that brown or slate colour hue which is one of the anatomical characters of chronic gastritis; in two cases the stomach was the seat of a cancerous affection; in the subject of the second case, the cancer existed also in the liver and kidneys; the stomach presented greater or less softening, either of its mucous membrane alone, or of all its tunics in three cases. Finally, we found ulcerations in the intestines in three individuals whose lungs contained tubercles.

The liver presented no perceptible alteration, except in four cases; it was cancerous in two subjects (cases 2, 3); there was cyrrhosis of it in a third, who had, at the same time, ascites (case 9); and, in a fourth, it underwent the fatty degenerescence (case 10).

In one case, in fine, we found numerous tubercles in the lungs, liver, spleen, kidneys, intestines, and, at the same time, there were some in the pia mater, pleura, and in the peritonæum (case 25).

In the subject of case 28th, there were at one and the same time tubercles in the lungs and spleen, without there being any in the intestines.

It follows, from the account which we have just now presented, that among the thirty-three individuals, whose history we have given, there were but very few, all whose organs were sound at the time their brain was affected with softening.

The cerebral hemispheres do not soften with equal frequency in the different points of their extent. On analysing with respect to the seat of the softening, on the one hand our own thirty-three cases, and on the other hand 117 cases published by different authors, and in which the seat of the lesion was precisely indicated, we found as follows:—

	CASES.
Softening of the entire of the hemispheres, ...	4
———— of only one hemisphere in almost its entire extent, ...	13
———— of the circumvolutions alone, ...	14
———— of the circumvolutions and other more deeply-seated parts,	9
———— of the anterior lobes, ...	27
———— of the middle lobes, ...	37
———— of the posterior lobes, ...	16
———— of the corpora striata, ...	28
———— of the optic thalami, ...	15
———— of the parietes of the ventricles, ...	2
———— of the cerebral peduncles, ...	1
———— dispersed through different points, ...	5

It has been said, that, in these different parts, the grey substance was more frequently softened than the white. We do not think this opinion sufficiently proved. In the softenings which occupy the nervous mass situated above the ventricles, there is certainly much more of the white substance engorged than of the grey, and the preceding table shows us that these softenings are very frequent. In the cases of softening of the corpora striata, it is not their external grey cortex that is most frequently affected; far from it, it is most usually intact, and the softening exists in its interior, and then both the grey and white substance are found equally deprived of consistence; the circumvolutions, where much grey substance exists, are far from being the parts most frequently softened. In several of the cases, the softening commences immediately beneath them, thus leaving the grey substance intact, and attacking the white exclusively. In consequence of the greater quantity of vessels contained by the grey substance, the frequency of its softening might become a further argument to be adduced in favour of the opinion of those who admit, that every softening is preceded by an inflammatory congestion; we may now judge of the weight of this argument.

The two cerebral hemispheres are softened with nearly equal frequency; we may satisfy ourselves of this, by looking to the following table, which results from the analysis of our thirty-three cases, and of 136 other cases borrowed from different authors. In all these cases, the softening was produced spontaneously, and we have not taken into the account those in which the brain lost its consistence in consequence of external violence, or a disease of the bones.

In these 169 cases, the softening took place—

	TIMES.
In the right hemisphere, ...	73
In the left hemisphere, ...	63
In the two hemispheres at once, ...	33

Most frequently we find in a hemisphere only one point softened; sometimes, however, we meet several of them separated by intervening spaces, in which the cerebral substance has its normal consistence. We have given some cases of this kind.

With respect to the extent which the softening may occupy, it is very variable: it may attack the entire of the two hemispheres, occupy only the entire of one, be confined to one lobe, to a portion of this lobe, and, in fine, at the other extremity of the scale we find cases in which a hazel nut could scarcely be contained in the space occupied by the softening; and yet serious symptoms have been produced by a lesion so circumscribed. Now, we may conceive the production of these symptoms in several ways; we may attribute it to the mere fact of disorganisation of the softened parts, or to the irritation felt by the rest of the encephalon, an irritation which sometimes evinces itself in the dead body by different lesions, and sometimes leaves, after death, no trace of its existence. The hemisphere opposite to that in which the softening is, may be affected also in a manner altogether sympathetic, and it is thus we may conceive general disturbances of motion and sensation, connected with a softening which occupies but a very circumscribed point of one of the hemispheres.

There is no period of life in which cases of cerebral softening have not been observed; its existence has been ascertained in mere infants, and in persons eighty-nine years old.

We cannot make use of the cases which have been published on softening of the brain, in order to deduce from them the medium of the age of individuals most liable to it. For this, in fact, it would be necessary that the same task which was performed by M. Rostan at the Salpêtrière, should be undertaken, for example, at the Hôpital des Enfans.

Passing over then the very small number of cases published up to the present day, on softening of the brain in children, and comprising in our analysis only the cases of individuals of from fifteen years old and upwards, we found that out of 153 cases of softening, the ages were distributed as follows :—

	CASES.		CASES.
15 to 20 years old, -	10	55 to 60 years old, -	18
20 to 25 - - -	9	60 to 65 - - -	8
25 to 30 - - -	9	65 to 70 - - -	26
30 to 35 - - -	6	70 to 75 - - -	19
35 to 40 - - -	5	75 to 80 - - -	11
40 to 45 - - -	9	81 - - - -	2
45 to 50 - - -	10	87 - - - -	1
50 to 55 - - -	9	89 - - - -	1

Thus, from the age of fifteen to forty we find, in this table, but thirty-nine individuals who have had softening of the cerebral hemispheres; from forty to sixty-five, we find fifty-four; and from the age of sixty-five to eighty-seven years there are sixty. The age which gives us the highest number is the period of life included between sixty-five and seventy-five years*.

With respect to the period of life comprised between birth and the age of fifteen years, cases are not wanting to show that, even during that time, the cerebral hemispheres may also be softened. Billard, in his Traité des Maladies des Enfans Nouveau-nés, has mentioned cases of fœtuses, which, on coming into the world, or a very little time after birth, presented a softening of the brain either partial or general. Other cases of softening of this organ have been published, in subjects of the age of one year, three years, four years, five years, nine years, twelve years, thirteen years, fourteen years. One of the most remarkable cases of this kind is that, for the knowledge of which we are indebted to Dr. Deslandes. In this case, of a child of three years old, all the substance of the brain, cerebellum, and pons, were reduced to such a state of softening, that it could not be touched without being destroyed; this substance presented no trace of injection; there was not a drop of serum in the ventricles; the pia mater was red.

It has been stated that, in an anatomical point of view, softening of the brain, in old men, differed from softening of the brain at other periods of life. From our researches on this subject, it results, that softening, not complicated with hyperemia, is more frequent in old age; but it is also found at all other ages, and it is far from being rare in infancy. At the time we were collecting some cases at the Hôpital des Enfans, we remember to have found many times several parts of the brain reduced to a soft consistence, without these parts being in the slightest degree injected. We have met in particular a complete softening of one of the optic thalami, without its colour being at all affected.

Is the one sex more disposed than the other to softening of the brain? This question might be easily solved, if an exact account were kept for some years of the number of cases of this disease, observed at the Bicêtre and the Salpêtriere. In the published cases, we found more females than males; but this may be owing to the circumstance of there not having being performed at the Bicêtre, a task similar to that performed at the Salpêtrière by M. Rostan. Let us pass by then, the cases of the latter physician, they being all connected with females, and let us see what information we may derive from other cases collected indiscriminately in subjects of both sexes.

In the cases we have cited, there are more males than females, twenty of the former, thirteen of the latter. But it must be observed, that a considerable number of these cases were collected in an hospital (the La Charité) where male patients were in much greater number than females. The numerical result might then only lead us into error, if we do not take into account the circumstances under which it was computed. In 116 cases, published by different writers, in which the sex was noted, we found that there were forty-seven males, and sixty-nine females. But here again it would be necessary to know, in what proportions the individuals of the two sexes were distributed in the hospitals, in which the cases were collected.

---

* The elements with which we drew up this table are:—1st, Our own 33 cases; 2nd, 40 cases of M. Rostan's; 3rd, 36 from M. Lallemand's work; 4th, 10 published by M. Bouillaud; 5th, 45 which we found in different periodical works.

Except the cases in which the softening of the brain succeeds to external violence on the cranium, the circumstances, under the influence of which it is produced, can be but very seldom ascertained. In some it comes on in the midst of perfect health; in others it is formed during the progress of different chronic diseases, without our being able to assert that the latter perform any part in its production. Without dwelling longer on this so obscure point of the history of ramollissement of the brain, let us now proceed to consider the different symptoms which during life indicate its existence with more or less certainty.

The intelligence, motion, sensation, undergo, in consequence of softening of the brain, different modifications, which we shall now detail.

The state of the intelligence is far from being always the same. In the first place there are cases, and very many cases, in which it preserves all its integrity. At other times the intellectual faculties are completely abolished from the commencement of the disease: this happens when the latter commences by a sudden loss of consciousness, or by a state of coma; after a time, which in general is variable, the intellectual faculties are re-established, sometimes entirely, which is rare, sometimes only in part, and then the individual has his intelligence dull and impaired until death.

In a third case, the intelligence never entirely disappears; but either from the commencement, or subsequently, it undergoes a perceptible weakening, and this weakening continues to the last. The persons who are in this case, have, as it were, a stupid air; some present that air of stupor, which is one of the characters of typhoid fever to a certain extent; their answers are slow and uncertain; they have but little memory, little connexion in their ideas; they seem also to have but little wants: they appear sunk in a sort of idiotism, or state of infancy: several present a state of almost continual somnolence. In some this drowsiness is the prevailing phenomenon during the entire course of the disease.

Lastly, we have adduced several cases, in which the intelligence was disturbed to such a degree as to give rise to delirium. This may manifest itself only at intervals, or exist continually. In some patients, the delirium appears from the commencement; in others, it comes on only at a more or less advanced period of the affection; we occasionally see it alternate, either with intervals of reason or with a state of coma.

In some subjects, the form of the delirium is such, that there is observed real mental alienation.

These different states of the intellectual faculties may show themselves one after the other in one and the same individual.

With these different modifications of the intelligence, speech may be preserved, or else be entirely lost. Among the cases which we have cited, some regard individuals, who, though appearing to have all their intelligence, were absolutely unable to articulate a single word.

We have seen some cases, and authors also mention others, in which intelligence, lost or perverted during the entire course of the disease, suddenly resumed remarkable clearness some hours before death.

Are these different states of the intelligence connected with the nature, seat, or extent of the cerebral lesion? or, in the present state of our knowledge, can they be explained only by a peculiar disposition of the nervous centres, which, with a lesion altogether identical are capable of undergoing functional modifications of the most dissimilar kind? We shall see how far observation will inform us on this subject.

Let us first inquire what are the anatomical conditions in which the encephalon is found in the individuals whose history we have detailed, and let us ask ourselves whether any connexion can be established between these different conditions and their intellectual state.

Sixteen subjects, that is, nearly half of our patients, presented no disturbance in the intelligence at any period of their illness. Among them, however, is one (case 11) who, the last day of his life, fell suddenly into a state of coma, in the midst of which he died. In these sixteen cases, we ascertained in the encephalon and its appendages the following state:—

In six patients the meninges were pale, of normal consistence, and no liquid infiltrated them. In six others, the arachnoid covering the convexity of the hemispheres was separated from them by a limpid serum situated in the pia mater: the serum was small in quantity, except in one case (case 3), where the ventricles were at the same time filled with a quantity of serum sufficient to distend them. In another subject, some serum infiltrated the pia mater of the upper surface of the brain, but it was turbid: this was in the individual in whom the coma supervened on the day he died. In two cases only this membrane was injected, and in one case the arachnoid and pia mater were changed into a dense opaque tissue, as serous membranes are, or rather the cellular layers which line them, when chronic inflammation has attacked them (case 4). This morbid state of the meninges was confined to the portion of the cerebral substance affected with softening.

In none of these sixteen cases did the brain present any alteration outside the softened parts, except in the subject of the eleventh case, who had coma on the last day, and in whom the hemisphere, not softened, presented in an accurately circumscribed point a very bright injection.

In these sixteen cases, the softening itself was found thirteen times whitish or greyish, as the cerebral pulp should be; three times only it presented a complication of hyperemia.

From considering what has been already detailed, we find that our cases of softening, where there was disturbance of intellect, did not differ materially from the cases where the intelligence remained intact, either with respect to the state of the meninges, or the state of the brain itself, considered external to the softening and within the softening.

Thus the presence or absence of disturbance of intellect, in cases of cerebral softening, seems to depend much less on the nature of the alterations discovered after death, than on the mode peculiar to each subject, according to which the irritation extends itself from the softened parts to the rest of the encephalon; the traces of this irritation are not such as the scalpel has been as yet able to discover. Thus, then, the infinite variety of the symptomatic forms of a disease can no more be explained, in many cases at least, by the different conditions in which the organ which is the seat of them is found, than we can account for the different modes according to which, in each individual, one and the same function is performed by the anatomical differences in the part which is the instrument of them.

Thus then we find, as well by our own observation, as that of others, that softening of the brain, most different in its seat, extent, and even in the state of the surrounding parts, may be equally accompanied with disturbances of the intelligence.

With respect to the cases in which the intelligence is always preserved or promptly recovered, we shall find them equally with and without lesion of the periphery of the brain.

The disturbance of the intellectual faculties can no longer be regarded as more particularly connected with softening of the anterior or posterior lobes, as some have asserted. Numerous facts prove that the lesion of these different lobes is equally followed by delirium or any other disturbance of the intelligence.

In the case where the disease commences by complete loss of consciousness, the softening occupies in general a great extent, as a great number of facts prove. However, in some cases of this kind, softenings have been found by no means extensive, considering the severity of the symptoms.

From numerous cases, we feel warranted in laying it down, that it is impossible to establish rigorously, from the existence or nature of the functional disturbance, the seat and extent of the softening.

Of the different disturbances of intelligence which may accompany softening of the brain, there is not one which, by its specific form, can suffice to point out, during life, the nature of the alteration affecting the encephalon. Simple injections, either of the meninges or nervous substance itself, considerable accumulation, either around the brain or in its ventricles, hemorrhage which has lacerated its substance, accidental products therein developed, may, in fact, equally produce, either delirium with all its varieties, or mere weakness of intellect, or sudden loss of consciousness.

In some of the subjects, whose cases we have recorded, one of the most prominent phenomena was loss of speech. The facts which we have recorded on this subject, tend to prove that the efforts made at different periods, to assign to certain parts of the brain the faculty of articulating and arranging language, are, at least, premature. We already discussed this question when on the subject of cerebral hemorrhage.

Softening of the cerebral hemispheres induces alterations in motion much more constantly than in intelligence. However, even this rule is not without its exceptions, and we have cited some cases in which we did not observe, in reference to motility, any appreciable modification. In the four cases of this kind which we have recorded, the softening occupied the most different seats. One time it was limited to some circumvolutions of the convexity ; another time it occupied, at the base of the anterior lobe of one of the hemispheres, a space large enough to contain a pullet's egg. Two other times it occupied several points of the two hemispheres (cases 1, 2, 3, 4). Several cases, however, are on record, in which softening of the brain existed without any disturbance of motion having been observed *. When this does happen, it is probable that the softening takes place very slowly. Such cases remind us of those in which the brain, subjected to a gradual compression by tumours developed around it, or in its substance, does not announce its suffering by any paralysis or other disturbance in locomotion.

When motion is affected, (and this case may be regarded as nearly constant), it is very far from being always affected in the same way. It has been laid down much too generally, that softening of the brain produced, in the greater number of cases, a flexion (contracture) of the limbs. Observation has satisfied us that this flexion may be as often absent as it is present ; but it is very true, that when it does occur, it becomes an excellent sign to distinguish a softening of the brain from every other affection of this organ. Let us not, however, regard such a sign as pathognomonic ; for it has been found in other cases where there was no softening. It has been often noticed, for instance, in the cases of congenital atrophy of the brain, published by MM. Bouchet and Casauvieilh (*Archives Générales de Medicine*, tom. ix).

The modifications which motion undergoes, in cases of softening of the brain, are far then from being always of the same nature. These modifications most usually consist either in simple paralysis, flexion of the limbs, or in convulsions.

---

* See Repertoire d' Anatomie et de Physiologie Pathologique, par Breschet, tom. i. p. 116, also Journal Hebdomadaire, tom. iv. p. 270.

There are other cases then in which motion is modified in quite a different way: we shall return to that subject presently.

The paralysis presents differences with respect to its degree, its progress, and its seat.

There are cases where it comes on but gradually. The patients perceive that one of their extremities has less strength than the other; one of their hands can hold objects less strongly than the other; they feel an awkwardness in using it; one of their arms appears insensible to them, or their leg drags a little in walking. This commencement of paralysis may remain stationary for a long time; then it is seen progressively to increase; or else it becomes all at once more considerable.

In other cases the paralysis does not pass through these different degrees; it comes on suddenly, and, from the first moment of its appearance, it is as complete as possible; it bears the greatest resemblance to the paralysis resulting from an effusion of blood into the brain.

When the paralysis is established but gradually, it shows itself only on one side of the body, unless the softening itself exist in the two hemispheres. When it suddenly acquires its highest degree of intensity, the case is the same, at least in the greater number of cases. Sometimes, however, it takes place on the two sides, though the softening may not be double; but that scarcely happens except when on the side where it has occurred, the softening may be very considerable. Then two things may happen: either the general paralysis continues till death, which soon takes place; or else, at the end of a certain number of hours, the movements of one side again become free, and there remains but hemiplegia.

The flexion (contracture) presents, in its different degrees, in its mode of appearance, in its progress, and its seat, the same differences as simple paralysis. As the latter, it may come on slowly, and increase in a manner quite gradual. Thus we see some individuals in whom the flexion continues for a long time confined to one single phalanx, or to one finger; then it extends progressively to the other fingers, to the entire hand, and finally to the fore-arm; the same progression takes place for the lower extremity. Once established on one of these points, it does not continue there always: there are some hours, and even some days, when it disappears to re-appear again. In its absence, sometimes, the parts which were the seat of it recover the entire freedom of their movements; sometimes they are weak, benumbed, on the road to paralysis, or finally they continue really paralysed.

The flexion (contracture) may also, as well as the paralysis, come on suddenly, and attain at once its maximum of intensity. It is by a violent flexion of one limb, or of the two limbs of one side, that a certain number of cerebral softenings actually commence. Under this form, the flexion indicates the nature of the disease with much more certainty than when it is established gradually.

Once produced, the flexion may continue, becoming either more and more intense, or diminishing, or remaining in the same state. But it may also disappear; there are cases, for instance, where it lasts only some hours; there are some where it ceases at the end of an extremely short time, where it shows itself for scarcely a few minutes; is then succeeded by simple paralysis. Once it has disappeared; it sometimes no longer shows itself again, sometimes it returns at certain intervals.

Besides paralysis and flexion, softening of the brain may again produce convulsive movements, which take place, as other lesions of motion, on the side of the body opposite to the softened hemisphere. There are some cases, where these convulsions mark the commencement of the disease; they cease after a longer or shorter time, and are succeeded by paralysis or flexion; at other times, they come on at a later period, and replace momentarily the abolition of motion.

Instead of being confined to one side of the body, the convulsions may be general, either every time they show themselves, or only from time to time. In the second case, it has happened more than once that there has not been found in the hemisphere opposite to that where the softening has taken place any lesion which could account for this momentary generalisation of the convulsive movements. In the cases, on the contrary, where the convulsions remain always general, we have been able almost always to discover lesions in the two hemispheres, or around them.

We have now considered the great modifications which motion undergoes in cases of softening of the cerebral hemispheres. With respect to the parts of the body in which the power of motion is injured, they vary for cerebral softening as well as for cerebral hemorrhage, and we refer to our observations on this last affection for all the questions regarding the determination of the seat of the paralysis, or of any other disturbance of motion. Only we shall here observe that, among the cases of softening which we have detailed, there are several which seem to us to form a very strong objection to the opinion of those who thought they discovered in the brain the particular parts which preside over the motion of the upper and lower extremities. Very probably, these particular parts do exist, since each limb may be separately convulsed, paralysed, &c., but it appears to us that these particular parts are yet to be found out, and we know nothing which can be so fatal to the sound doctrine of the localisation of the cerebral functions, as those premature localisations which some persons have been inclined to establish in latter times.

There are some rare cases in which the softening of the cerebral hemispheres gives rise to disturbances of motion, different from those of which we have hitherto spoken. Thus, in some individuals, there have been observed symptoms of tetanus, either partial or general ; in others, epileptic symptoms have been observed.

Lesions of sensation have also their importance when it is an object to establish the diagnosis of softening of the brain. These lesions may be seated either in the head itself, or in other parts of the body. The head is often the seat of a pain, to which we must first direct our attention.

This pain, which has been remarked by all observers, shows itself in a considerable number of cases ; but it is far from being constant, as may be seen by perusing the cases already cited.

When it does exist, it shows itself most frequently at the commencement of the disease ; it may then precede all the other symptoms, and continue single for a certain time ; we have recorded cases, in which individuals were attacked with headach for fifteen days, twenty-five days, and even more, without presenting any other derangement in their health. Ordinarily, this precursor, marked by headach alone, lasts a shorter time, from some hours to five or six days.

There are other cases where, from its commencement, the pain of head is accompanied by divers phenomena ; but sometimes these phenomena are not yet of the number of those which may serve to indicate it. Thus, in some of our patients, we have seen the pain of head complicated, from the moment of its appearance, or soon after, with dizziness, vertigo, tinnitus aurium, unusual redness of the eyes and face : these symptoms announced nothing yet but mere cerebral congestion. But on other occasions, at the same time that the pain of head comes on, it is complicated either with a diminution in the activity of the intellectual faculties, or some lesion of motion. The latter may be so very inconsiderable, that the patients themselves do not call the attention of the physician to it, their thoughts being absorbed by the pain of head.

Once come on, the pain of head may continue with variable degrees of intensity ; but it often ceases, according as the lesion of motion becomes more marked. Many patients, who still retained all their intelligence, have assured us, that, at a certain period of their complaint, they no longer felt the slightest trace of the pain of head, which at first had occasioned them so much anguish. We must not suppose, however, that the headach no longer exists in those persons who cease to complain of it: it seems to continue, for instance, in several patients, who sunk in delirium or coma more or less profound, continually apply the hand, that remains free, towards their head, and even towards a particular part of the head. At other times, when their intelligence is as yet only impaired and blunted, and they happen to be asked whether they feel pain any where, it often happens that at first they make no reply; but if they are pressed, they slowly apply the sound limb to the head, and in several cases it is to the side of the head opposite the limb whose motion is injured that they would apply the hand. This sign, as has been already remarked by Professor Rostan, is of the greatest importance; it suffices almost singly, adds this learned observer, to characterise ramollissement.

The cerebral substance, which may be cut and torn in living animals, without their manifesting any feeling of pain, is then capable, as well as several other tissues, of becoming very sensible in the morbid state. It is not here, as in inflammation of the lung, which is not accompanied with anything of acute pain, except when the pleura itself is irritated. In the cranium also, the acute or chronic inflammation of the serous membrane is accompanied by a pain, the history of which we have traced in another part of this volume; but this pain manifests itself equally in case, where the membranes have continued perfectly sound, in those very cases where the softening is produced at a considerable distance from the periphery of the brain. Thus it is the cerebral pulp itself that becomes painful. But why are these cases completely identical with respect to the seat and form of the softening, which differs, however, with respect to the pain, which is absent in one of the cases, and present in the other? That is a question which cannot be solved in the present state of science. Let us remark only that the same difference is found to exist in all the other organs, and that the most painful diseases may sometimes present themselves altogether free from pain; thus we have seen large purulent effusions into the peritoneum, suffer us, however, to press the abdominal parietes forcibly, without any painful sensation resulting from it.

The headach produced by softening of the brain has not always the same seat: sometimes it is scattered vaguely over the entire head, and cannot in any way indicate the point where the disease exists; sometimes it shows itself to be sure in a circumscribed place, but this place does not correspond with the softening: thus, with several patients the forehead alone is painful, though it may be far from this region that the brain had lost its consistence. But observe that in a number of different affections, whether of the brain or of other organs, when suffering reacts upon it, it is also towards the forehead that the pain is felt. There is there then a sort of place of election for warning the sensibility, wherever else the seat of the lesion may be placed. Sometimes, in a word, the pain of head is exactly limited to the point of the parietes of the cranium, corresponding to the softened portion of the cerebral pulp.

With respect to the intensity of the pain of head, it is very variable: some patients complain but of a weight, a sort of constriction, either diffused over the entire cranium, or fixed to one point. In others, again, the pain is more acute.

Whether the pain of head exists or not, different parts of the body may present in their sensibility several modifications. Sometimes this sensibility is diminished or abolished, sometimes, on the contrary, exalted. The diminution or abolition of sensibility is remarked particularly in the skin covering the paralysed limbs. In most cases this happens only when motion is already altered, but there are individuals, however, in whom, a long time before the appearance of the symptoms characteristic of softening, the extremities of the fingers of one of the hands, or of the toes of one of the feet, become numbed, or cold, or are the seat of annoying formications; then, according as the lesions of motion are established, the sensibility diminishes more and more, and finally is extinguished altogether.

The exaltation of the sensibility is again among the number of the phenomena frequently produced by softening of the cerebral hemispheres: it may be seated either solely in the skin or in the parts situate beneath the skin.

Most frequently the exaltation of the cutaneous sensibility does not extend beyond the parts in which motion itself is altered. The skin here becomes at times exquisitely sensible, so that the slightest pressure produces the most acute pain, and sometimes occasions convulsive twitches in the limb affected.

With respect to the functions of organic life, the digestion is, in general, not disturbed; the tongue preserves its natural appearance with regard to its colour and moisture; vomiting is but seldom seen to supervene. In some cases, when the softening follows a chronic course, signs of gastro-intestinal irritation, more or less severe, are seen to occur, which soon throws the patient into a profound coma, and accelerates his death.

The circulation is far from being always modified in the same manner in individuals affected with softening of the brain. The pulse is in general accelerated, sometimes, however, it retains its physiological state. We may lay it down, however, from a careful consideration of the preceding cases, that the presence or absence of the acceleration of the pulse depended solely on the individual predispositions, since in cases in other respects identical, it was sometimes present and occasionally absent. M. Rostan attaches considerable value to the state of the pulse for the purpose of establishing a diagnosis; it may, single and alone, he adds, guide us in the employment of therapeutic means, and in this view we entirely coincide.

MM. Lallemand and Bouillaud have laid it down, on the contrary, as a principle, that inflammation of the brain, supposing it exempt from all complication. exercises no influence on the circulation.

Out of 227 cases of softening of the cerebral hemispheres, either simple, or with hyperemia, or with the commencement of sanguineous effusion, or, in fine, with purulent secretion, the pulse, with respect to the number of its beats, presented the varieties indicated in the following table :—

	TIMES.
Pulse in the normal state	26
Pulse retarded	15
Pulse accelerated	72
Pulse, first normal, then frequent	10
Pulse frequent, then retarded	2
Pulse not noticed with respect to its frequency	97

With respect to the strength of the pulse, it appeared very variable both in those cases which came under our own care, and in those published by others. The same may be said of its rhythm, which we found but very seldom modified. In the cases, however, noted by MM. Lallemand and Rostan, the pulse is set down as being frequently irregular or intermittent. We are inclined to suspect that in many of these cases there existed an affection of the heart.

The respiration is often influenced by softening of the cerebral hemispheres. It is of an affection of this function that some patients die who labour under this disease. The respiration may be disturbed in one or other of the three following ways :—

When the progress of the softening is very acute, when it is accompanied with symptoms called apoplectic, the respiration is modified from the commencement, it is at once accelerated, and becomes stertorous, as in cases of cerebral hemorrhage.

When the softening, on the contrary, has a slow progress, the respiration at first is not disturbed, but it gradually becomes difficult and irregular; it is evident, from observing the way in which the movements of inspiration and expiration are performed, that the functions of the lung no longer go on as in the normal state, and we perceive a sort of slow asphyxia gradually take place, in which the patient dies.

Finally, there are several intermediate cases in which the softening is neither so rapid nor so slow as in the two preceding series, and where the respiration may still present remarkable modifications. We have seen some individuals in whom the respiration, at first, was not at all disturbed from the commencement; then suddenly, without any known cause, it became accelerated and difficult; a râle was heard all over the chest, and the patients died rapidly in a state of asphyxia. In such cases the lesion of the nervous system suddenly exercises on the respiratory apparatus an influence which was not felt at the commencement; and it is by disturbing the respiration that the affection of the brain produced death.

With respect to the duration of this disease, the inference which we are warranted in deducing, from the consideration of 105 cases, is, that softening of the brain is much more frequently an acute disease than a chronic one. We see that very few individuals die before the second day; the greatest number die, on the contrary, between the second and twelfth day. At the end of the first month, out of 105 subjects affected with softening, there remained more than sixteen who survived it; after the second month, there remained more than ten; after the third month,only seven individuals survived, and among these there were two who for three years resisted this cerebral lesion.

Hitherto we have always supposed that ramollissement of the cerebral hemispheres terminated fatally. May it, however, terminate favourably? In order to be able to answer in the affirmative, it would be necessary that the symptoms to which it gives rise should be so characteristic, that the mere fact of their appearance would no more allow us to doubt of the existence of cerebral softening than the reddened sputa and bronchial souffle allow us to doubt of the existence of pneumonia. The difficulties found by observers in ascertaining with certainty the real existence of cerebral softening have obliged M. Rostan to withhold any positive decision on the question, whether the brain, once deprived of its normal consistence, may afterwards recover it. This reserve of M. Rostan's we think absolutely enforced by the present state of science; and we do not think that M. Lallemand has satisfactorily proved, by the cases he has cited, that the circumscribed induration of one of the hemispheres is sometimes the mark of a softening which has been cured.

Death, which is the termination, at least very frequently, of this affection, may result from the mere disturbance which the softening of a part of the brain produces in the functions of this organ; and we have seen that a softening of very limited extent was often sufficient to throw those functions into the greatest disturbance. The softening may continue for a very long time without any other lesion complicating it; but, at other times, death is produced, or hastened, by one of these complications. We have already specified them. M. Lallemand's cases have proved that a great number of softenings might terminate, either by sanguineous effusions within the softened part, or by a secretion of pus which remains in a state of infiltration, or which collects into an abscess. Sometimes a hemorrhage takes place in a different part of the brain from that which is softened, and it is of it the patient dies. In other cases, an intervening affection of the meninges hastens death. Again, in cases where the softening follows a chronic course, inflammations of different organs, and particularly of the lungs and digestive tube, are added to the cerebral disease, and are the cause of death.

If it were satisfactorily proved that softening of the brain is but one of the forms or degrees of inflammation of this organ, the therapeutic indications would be always easily established, as then the antiphlogistic treatment should in all cases be adopted, care being taken only to proportion its energy to the strength of the subject, to his constitution, to the nature of the symptoms, &c. In the present state of our knowledge of the nature of this disease, we think that here, as in several other circumstances, the indications are furnished us less by the nature of the affection than by the symptoms which accompany it, and the general state of the economy. Suppose, as often occurs, that softening of the brain is accompanied with all the signs of an active hyperemia, pulse strong and full, intense delirium, agitation, convulsive movements, rigidity, or contraction of the limbs; in such cases blood-letting is indicated. Caution, however, must be observed, as we have known more than one case wherein repeated and large bleedings were followed by an exasperation of all the symptoms. Nor are we satisfied that blood-letting can have any influence, except a bad one, on that species of depression which the intelligence presents in several individuals affected with softening of the hemispheres. In these latter cases, leeches applied from time to time to the anus seem to us preferable to opening a vein; they may be applied also to the mastoid processes. Dry cupping towards the base of the cranium, a seton to the nape of the neck, revulsives on the lower extremities, seem to us the means particularly indicated. Internally, mild tonics may be serviceable; and in the last kind of case we supposed, we would recommend the daily administration of the different preparations of iron or quinine. Even admitting that every cerebral softening is an encephalitis, either acute or chronic, we would not shrink from the line of treatment we have now laid down; for, in order to remove an inflammation in certain cases, and to arrest its progress in other cases, it certainly is not sufficient to attack it either by blood-letting or by revulsives. It is very often necessary to support the vital forces to a certain standard, below which inflammation cannot be resolved. Much has been said, in latter times, of the tendency which many inflammations have to pass to the chronic state, or to disorganisation of the tissues, when they are not met at their commencement by sufficient blood-letting; but, on the other hand, it must not be forgotten that excessive losses of blood may have precisely the same effect as insufficient losses. Great stress, also, has been laid, and with every reason, on that false state of adynamia which several inflammations bring after them, by the mere fact of their intensity. We entirely agree in this mode of considering the subject, so admirably developed by M. Broussais; but we also admit another adynamia, which is no longer simulated, of which the symptoms really express the failing of the strength of the system, which no longer depends on the intensity of the inflammation, but rather on the conditions of innervation and hematosis, in which this inflammation found the economy.

FOURTH ORDER.

OBSERVATIONS ON HYPERTROPHY OF THE CEREBRAL HEMISPHERES.

This morbid change, which is somewhat rare, has hitherto but little engaged the attention of observers. M. Bouillaud, in his *Treatise on Encephalitis*, and Dance, in a paper, published on the subject*, are the only authors, to our knowledge, who have written any thing on it; we may add to these names that of Dr. Scoutetten, to whom we are indebted for a knowledge of a very remarkable case of this kind †.

Hypertrophy of the cerebral hemispheres should be distinguished from another affection, in which also these parts are increased in size, but by mere hyperemia;

---

* Repertoire d'Anatomie Pathologique, publié par Breschet, 1828.

† Archives Générales de Médecine, tome viii. p. 31.

inconsiderable though it may be, this hyperemia produces, in the brain, as elsewhere, a tumefaction of the parts where it exists. We have given some examples of it, when treating of cerebral congestions; but that is not the character of true hypertrophy.

Hypertrophy of the brain should be not only distinguished from simple hyperemia; but again it should be known, that the first does not necessarily include the existence of the second, and that the contrary even most frequently occurs. Every time that we have found in the dead body a brain really hypertrophied, and not merely increased in volume by hyperemia, there was at the same time remarkable paleness. The cases of Dance give the same result.

It may be admitted in theory, that one of the consequences of the frequent repetition of cerebral hyperemia, may be the production of hypertrophy: let us remark, however, that we have not the latter lesion in a certain number of individuals, whose bodies we examined, and who were for a long time subject to cerebral congestions.

It may also be supposed, that great activity in the exercise of the cerebral functions may equally produce, after a time, an excess of development in the organ which performs these functions. Are we also to presume that the hypertrophy found as the sole lesion in a certain number of epileptic subjects, did not exist at the commencement of the disease, and was itself but the effect of the violent perturbation which the brain underwent, on the return of each epileptic attack?

At the same time that the brain, in becoming hypertrophied, tends to occupy a greater space, the bony case which incloses it may not increase in size, or else may become enlarged, according as the brain itself becomes developed. In the cases known to the present time, the former occurrence is more frequently met than the latter. It follows, that in most of the cases of hypertrophy of the brain the latter must be subjected to an habitual compression, more or less considerable. We may conceive how, under such circumstances, the occurrence of a slight hyperemia must be more serious. Instead of producing pain of head or dizziness, it may give rise to the most alarming consequences; may bring on, for example, an attack of epilepsy; in some instances may occasion death. This will be readily conceived, if the anatomical characters of hypertrophy of the brain be considered, such as we have described them in our work on Pathological Anatomy, and such as they will be found in the cases to be cited hereafter.

We have not, up to the present time, seen hypertrophy of the brain affect subjects more than thirty-five years old. The cases which we shall cite, and those published by others, relate to individuals aged from twenty to thirty years. However, it has been also observed in infancy.

Hypertrophy of the cerebral hemispheres has been sometimes unaccompanied by any symptom; that is, when the parietes of the cranium are developed in the same ratio as the brain. Such was the case of the child, as detailed by M. Scoutetten. This individual, about five and a half years of age, had a head the size of which equalled that of an adult; it was by degrees that it increased thus. The development of the cranium was much more marked behind than before; the forehead was elevated, but not projecting; all the cerebral functions were duly performed; the intelligence was suitable to the age of the subject. It was seen to sleep tranquilly and profoundly. The only phenomenon presented by the child was the frequent falls caused by the weight of the head, which was suddenly carried forward when it wished to run, and thus caused it to fall. This child died of acute enteritis, towards the close of which the intellectual functions were completely abolished.

On opening the body, it was ascertained that the parietes of the cranium were thicker than usual. The brain itself presented nothing more than a great development of all its parts, particularly of the nervous mass situated above the ventricles.

The latter contained but a very small quantity of reddish serum. The pia mater was very much injected, and of an opaque white in some points. The dura mater adhered firmly to the bones of the cranium.

This is the only case we know in which the hypertrophy of the brain was not accompanied by any symptom; and the simultaneous development of the encephalic mass, and of the parietes of the cranium, sufficiently accounts for it.

The symptoms which, up to the present time, have accompanied hypertrophy of the brain, relate to certain disturbances of the intelligence, sensation, and motion.

Several patients were in a real state of idiotism; in others we only remarked a dull state of the intelligence, which increased and diminished alternately; then acute delirium was seen suddenly to supervene, or profound coma, and these two phenomena were soon followed by death. On one occasion, we observed signs of mania.

In certain cases, a headach of long standing, which, at intervals, became worse, and which was reproduced under the form of violent crises, was the prevailing symptom. Several patients complain of vertigo, dizziness, as if they had simple cerebral congestion. In others, the sensibility becomes suddenly more obtuse; or else a period arrives, when, after having remained a long time intact, it becomes suddenly abolished.

The disturbances observed, with respect to motion, are of several kinds. Sometimes it is mere debility of the limbs, which goes on increasing, and terminates in general paralysis; sometimes there are convulsive movements, at first infrequent, and not intense, then more frequent and more severe: the patient may die in these convulsions, or in the coma which succeeds to them. At other times hypertrophy of the brain betrays its existence principally by a group of symptoms which characterise epilepsy, the attacks become more frequent, and death supervenes in the midst of one of them.

The functions of organic life are not in general disturbed by hypertrophy of the brain. The pulse has usually its accustomed frequency; sometimes, however, it becomes slow. We have seen one case where it was only forty-five.

The symptoms connected with hypertrophy of the brain are so arranged, that two periods may be reckoned from them: one, in which it presents all the characters of a chronic affection; and the other, in which it suddenly assumes the appearance of an acute affection. It is in the second period that the patients die.

During the first period, the symptoms remarked are especially different disturbances of the intelligence, a slight or intense headach, which is permanent or transient; convulsions at intervals; and, finally, true epileptic attacks, more or less repeated. These different symptoms may all exist in one and the same subject, or develop themselves separately.

After this period has lasted a longer or shorter time, the second comes, unless the patient be previously carried off by the intervention of some other affection. Then different symptoms and different forms of diseases appear: thus, some individuals are seized suddenly with very violent convulsions, in the midst of which they die; others present the signs indicative of compression of the brain, or else those characterising acute hydrocephalus. Some die almost suddenly. The following cases, which we have collected, will serve to confirm and develop the general propositions which have been now laid down:—

Case 1.—*Megrim of long standing, which was succeeded by constant pain of head—At a later period, convulsive movements, whose severity, constantly increasing, brought on death.*

A man, twenty-nine years of age, of strong constitution, gave us the following history of himself, on entering the Maison de Santé, in Sept. 1830. At the age of seventeen, he began to feel a violent headach, accompanied with vomiting. This went off after twenty-four hours. From the age of seventeen years till he was twenty-eight, two months scarcely passed without his experiencing the same symptoms, which were considered by him and by those who saw him, as attributable to megrim. When he had it not, he enjoyed very good health. It was only about a year previous to his being submitted to our care that these symptoms, which had not appeared up to that period of any importance, assumed a more serious character. He then began to feel constantly a pain, which occupied the entire head, but more particularly the frontal region and the two temples. This pain, usually dull, became, from time to time, very intense; then the patient shunned the light, pressed his head with his hand in order to relieve himself, and remained very quiet. Six months after this headach commenced, he was seized one day, in the two arms, with involuntary movements, and convulsive twitches, which he could not resist, and which were accompanied with an acute pain in the convulsed limbs. This new scene of phenomena lasted for some hours. When the convulsions ceased, the patient remained very much fatigued, and, dating from this time, he was weak and languid; he always felt as if exhausted by running a very long journey. He was averse to moving, and every morning, on awaking, he felt himself quite harassed. Pain of head continued, and became more intense. During the six months preceding his admission to the Maison de Santé, he felt five or six times, in the two upper extremities, the same convulsive movements. In fine, these movements became all at once much more intense, and at the same time much more frequent. During the eight days preceding his admission, they were nearly constant, and began to attack also the lower extremities, and more particularly the left.

When the patient was first examined by us, he looked like a man worn down with fatigue; he was able, however, to state, with ease and precision, all the details we have now given: he had not at that time any convulsions, and could not speak of their return without a degree of terror. The pain of head was now moderate, on the preceding day it had been most violent. The senses presented no alteration. Pulse natural; appetite considerably diminished for some time back.

We were very much puzzled to form a diagnosis of such an affection; it had in its symptoms something unusual which did not appear to be connected with any of the known cerebral lesions. What was in particular the cause of those intermitting convulsions, in the intervals of which motion remained perfectly free, and which, for a long time confined to the upper extremities, commenced some time back to become general, and to extend to the lower limbs? If the patient had not presented that pain of head so remarkable for its long standing, its continuance and its periodical exasperations, we should have thought that the spinal marrow was the source, whence all these symptoms derived their origin; but whilst in placing in this marrow the seat of the lesion, we could not well pronounce an opinion on its nature, it seemed to us that the different symptoms we observed might depend on the existence, within the two hemispheres, of accidental products slowly developed. Were they tubercles? We hesitated to admit it, recollecting the law laid down by M. Louis, and the truth of which we so often proved, according to which tubercles are rarely found in other organs, except when they have been in the lungs. Now in this person the respiratory apparatus appeared perfectly sound.

Such were our reflections on the case of this patient, and the hypothesis we assumed regarding the nature of his complaint were far, as we shall see, from representing the truth.

However, the days following, the patient presented a deplorable state. The pain of head became more intense than ever: it was so violent that the patient made the ward resound with his groans and cries. This attack lasted during two or three hours; then the pain diminished, without ever entirely disappearing, and at this time the patient, as if worn out by his sufferings, remained immoveable, without however being able to get any sleep. Once or twice a day, he felt, both in the upper and lower extremities of the right and left side, twitches which were painful, but of short duration; occasionally also the muscles of the face were affected by some convulsive movements. In the midst of all these disturbances, the intelligence remained intact, and the pulse was fifty-five.

Nine or ten days passed on in this way, at the end of which time the convulsive movements became suddenly much more violent; the face and four extremities were simultaneously the seat of them; after having lasted almost without interruption for thirteen hours, they ceased suddenly; but nearly at the same time the respiration became embarrassed, it became stertorous, as in apoplectic patients, and the patient died rapidly.

Post mortem. The meninges presented nothing extraordinary. The external surface of the brain struck us by its very singular appearance: the spaces separating the circumvolutions had disappeared; the latter were compressed, and as it were squeezed together; they evidently acquired a greater development at the expense of the anfractuosities. Not a drop of serum in the arachnoid or pia mater, nor in the lateral ventricles, the parietes of which touched and pressed each other much more than natural. The nervous substance itself presented two remarkable changes with respect to its colour and its density: its colour was so changed that at its circumference the grey layer of the circumvolutions was scarcely any longer distinguishable from the subjacent white substance. The latter itself is everywhere bloodless; on cutting it we do not perceive the orifice of any vessel, nor can we distinguish the least drop of blood in the slices that are taken from it. The grey substance scattered on the interior of the hemispheres, more particularly that entering into the composition of the optic thalami and corpora striata, was colourless as the grey substance of the circumvolutions. Through the entire extent of these hemispheres, the substance constituting them attained extraordinary density; it resembled the white of an egg hardened by boiling; it has the same consistence and the same elasticity also.

Remarks.—The anatomical characters of hypertrophy of the brain are very well marked in this case. The increase of density here coincided with the increase of volume, as was satisfactorily proved by the total effacement of the anfractuosities; the blood also had really fled from the cerebral substance, so that there was here a coincidence of hypertrophy and anemia.

Is the headach, in such a case as this, the result of the compression to which the nervous substance was subjected? It was for a long time the only symptom. At the time it was considered as a simple megrim. Did it already announce the commencement of the cerebral lesion? If so, the latter was formed very slowly, and a long time elapsed before it produced serious symptoms and compromised existence. These symptoms principally affected motion and respiration. The intelligence continued constantly intact, whilst, on the contrary, it was disturbed in the following case.

CASE 2.—*Gradual weakening of the intelligence—Epilepsy—Pain of head of long standing—Death in the midst of an attack.*

A female, twenty-seven years of age, was epileptic from the age of twelve years, when she entered the hospital Cochin. From the age of twelve up to nineteen, the period at which she menstruated for the first time, she had an attack of epilepsy every three or four months nearly. The appearance of the menses did not cure her; on the contrary, from this period the attacks became more frequent; three weeks did not pass without the occurrence of one. Towards the age of twenty-one, she began to feel at intervals a violent pain of head, which she called megrim; it returned about every six weeks or every two months, and was neither preceded nor followed by the epileptic attack, with which it really did not seem to have any connexion. Up to the age of twenty-four, this woman thus continued subject to the two affections which we have just mentioned. In the intervals between her crises of headach, and the attacks of epilepsy, she presented no disturbance of intelligence, sensation, or motion. The menses came regularly every month; but between the twenty-fourth and twenty-fifth year, the disease changed its aspect: the headachs were no longer so violent; they no longer returned under the form of crises; but the patient began to feel habitually a dull sort of pain of head, principally seated towards the forehead, which consisted in a feeling of weight; the attacks of epilepsy became more and more frequent, and at the same time the intelligence, till then intact, began to be altered. At first this woman's temper became very strange; there was observed something singular in her conduct and manner, which caused those who usually saw her to say that she was becoming mad. However, this modification of the intelligence was not of long duration, and soon, instead of being perverted, it was only weak. Insensibly this woman fell into a sort of state of imbecility, at the very highest stage when she was admitted into our wards at the Hôpital Cochin. From thence she was removed to the Salpetrière. We learned all the history of the case from her relatives. They further told us, that for the last year she had not passed three days without having an attack of epilepsy, and that often she had several of them in one day. The menses had ceased to appear for the last six months only. On our examining her, we could only discover weakness of intellect; the power of motion was free; sensibility not affected. The functions of the life of nutrition did not seem to have undergone any perceptible change.

During the five days following the patient had, almost every day, an attack of epilepsy, which we did not witness. On the sixth day, dating from her admission, we found her dead in her bed. According to the account of the attendants, she had been attacked, during the night, with a very violent attack, which was followed by a profound stupor, in which she died. We satisfied ourselves, however, that the attacks were epileptic.

Post mortem. We had scarcely raised the arch of the cranium, when we were struck with the singular tension presented by the dura mater. It was very much pressed from within outwards by the substance of the brain. When we cut into it, we discovered the two other meninges, of which the one, namely, the arachnoid, was, at its free surface, remarkably dry, and of which the other, the pia mater, entirely deprived of serum, was traversed by some veins containing a very little blood. These two membranes were torn with very great facility. Beneath them the external surface of the brain had a singular appearance. No anfractuosities were any longer distinguishable there, so much were all the convolutions pressed one against the other. The nervous substance, through the entire extent of the hemispheres, was remarkably pale; scarcely could the grey substance be distinguished from the white by the colour. This substance had also attained in every part great density; in most of the parts, where it was examined, it was found similar, as in the preceding case, to white of egg hardened by boiling; in some this pulp had really the consistence of a cartilage. The ventricles were really empty of serum. The corpus callosum, fornix, and septum were also increased in density; on the contrary, the pons Varolii, cerebellum, and the spinal marrow had their natural consistence.

Remarks.—This case, compared to the preceding, resembles them very much with respect to the anatomical lesions; and yet, in certain respects, the symptoms are not the same. The two individuals were equally subject to an intense headach; in the first, it was, for a long time, the only phenomenon: in the second, it alternates with epileptic attacks. The latter replace the simple convulsive movements in the subject of the second case; in her, the disturbance of intellect was very marked, whilst in the other, the intellectual faculties preserved all their intelligence.

CASE 3.—*Gradual debility of the intelligence, motion, and sensation—Convulsions at intervals, with loss of consciousness—Death in an adynamic state.*

A countryman, thirty-nine years of age at the time of his entering the hospital La Pitié, commenced to feel, for about ten years before, pains of head, which returned at intervals, some of them being accompanied with confusion in his ideas. One day, the pain of head returned with more violence than ever, and, after having been tormented for three or four hours, he was seized with strong convulsions, and he soon fell, deprived of consciousness. At the end of a little time, he came to himself; but, dating from this moment, he no longer recovered his usual intelligence; he had less memory, he was no longer capable of any employment, and he was obliged to give up his situation. During the following years, the intelligence became weaker and weaker, and, at the same time, the muscular strength gradually diminished, as also the sensibility. At intervals, this man suddenly lost consciousness, and he was seized with convulsive movements in the four extremities.

After having been a long time in the hospital of the country where he lived, he was brought to me, and I received a written note, containing the preceding details; for he was himself incapable of giving any.

When I saw him, I could scarcely force from him the most vague answer; a continual air of abstraction was imprinted on his countenance: he was observed to laugh and cry without any motive: he scarcely knew whence he came or where he was. When asked whether he felt pain in any part, he pointed towards his forehead. Cutaneous sensibility very obtuse. It was with considerable difficulty he could sustain himself on his legs, which were staggering, and from time to time were taken from under him; they both seemed equally weak. A constant trembling agitated the upper extremities; and the two hands could neither of them hold any thing; vision was intact, as well as the other senses; he did not however appear to perceive smells: pulse 56; digestion good; the respiration tranquil.

This patient was admitted into one of the wards of the La Pitié.

During the three first weeks he was in the hospital, nothing new presented itself about him; only at three different times he lost consciousness, and had convulsive movements; these circumstances were seen only by the sister of the ward. This man, who was remarkably taciturn, remained immoveable in his bed, and they were obliged to watch him as a child. During the fourth week of his stay, a large eschar commenced to form on the sacrum; the tongue became dry: teeth black; fæces and urine possed involuntarily; death five weeks after his admission.

Post mortem. The cerebral hemispheres presented in their circumference the same appearance as in the two preceding cases: there was here the same packing of the circumvolutions, the same effacement of the anfractuosities, the same hardening and paleness of the nervous substance; in fine, the same dryness of the enveloping membranes. As in the other cases, the cerebellum, pons, and spinal marrow were not affected.

Remarks.—Here again we find symptoms very much resembling those presented by the two preceding cases, but they are combined and connected differently. The first phenomenon which appeared, was a headach, which returned occasionally, and which was not connected with any other serious symptom; then suddenly there came on other phenomena, which have at least some resemblance to those characterising epilepsy, and dating from this period, the intelligence, hitherto intact, became disturbed, and gradually weaker. Anatomy really shows us but the last term of the disease, and does not reveal to us all the shades or all the degrees through which the alteration must pass, from the moment when it evinced its existence only by a transient pain of head, to that when serious disturbances attacked simultaneously intelligence, motion and sensation. What, for example, was the change, which came on suddenly in the brain, the day when, with equal suddenness, the patient was seized for the first time with an epileptiform attack? Did hypertrophy of the brain already exist at this period? Was there as yet but mere cerebral congestion? Did this congestion ever exist at any period of the disease? This congestion, which is so convenient to serve as a means of explaining a great number of cerebral disturbances, is it as common as we imagine? We would have a right to doubt it, if we reflect that, in many of the cases, where the symptoms which we attribute to it had existed during life, anatomy shows us no sign of it. It is certainly from views altogether hypothetical, that we constantly make it come in to explain, either most of the disturbances of organisation, or many functional disturbances.

Here are there cases where the brain is the seat of an alteration precisely similar. Why was the intelligence disturbed in the two latter cases? Why did it remain intact in the first?

FIFTH ORDER.

OBSERVATIONS ON ATROPHY OF THE CEREBRAL HEMISPHERES.

We have elsewhere pointed out all the degrees of this atrophy, from that wherein the hemispheres are completely wanting, to that wherein some circumvolutions are absent, or incompletely developed. We shall here direct our attention particularly to those cases of atrophy, which are compatible with the possibility of an extra-uterine life more or less prolonged.

These cases are those wherein there is atrophy or want of development, either total or partial, only in the nervous mass situate above the ventricles.

We have not seen any case, in which the complete absence of this nervous mass of the two sides coincided with the prolongations of life, beyond a small number of months after gestation; but authors have cited examples of it, and in these cases it was merely vegetative life which took place.

When atrophy exists only in one side, life may continue for a very long time. We have seen cases of this kind: above the lateral ventricle of one side, there was no longer found any nervous substance; the arachnoid, usually covering the convexity of the hemispheres, was found in apposition to that which should line the parietes of the ventricles; these two folds, of one and the same membrane, were separated from each other by a cellular tissue, provided with a great many vessels. Sometimes, in such cases, the cranium preserves its natural form and dimensions; then a great quantity of serum raises the arachnoid, and also fills the vacuum, which would exist without it, between the cranium and remaining parts of the hemispheres; sometimes the form of the cranium is changed; its parietes are as it were sunk in the points which correspond to atrophy of the brain; and during life, we find on one of the sides of the cranium, a greater or less depression, which may assist in the diagnosis. Here is a remarkable example of the first of these two cases.

Case I.—*Absence of the entire nervous mass situate above the right lateral ventricle, with the exception of the part of this mass anterior to the corpus striatum—Normal conformation of the cranium—Lesion of motion in the left extremities—Integrity of intelligence—Pulmonary tubercles.*

A man, twenty-eight years of age, fell, when three years old, from a first story into the street: he fell on his head. After this fall he remained paralysed on the left side. By degrees an habitual extension of the left foot on the leg was established, so that, on the left, he walked only on the point of the foot. The left upper extremity was completely deprived of motion ; no trace of contraction any where observed. This person had received some education, and had profited by it ; he had a good memory ; speech perfectly free ; and his intelligence such as is ordinarily met with in the generality of persons. Having entered the infirmary of Bicêtre, where he lived, for a chronic affection of the chest, he was there seized with symptoms of acute peritonitis, of which he died.

Post mortem. The vault of the cranium having been removed, the meninges of the right side were found transparent, and fluctuating through almost their entire extent. They were cut into, and a clear, limpid serum, like rock water, gushed forth. Between these meninges and the ventricles, there existed not the slightest trace of nervous substance ; these membranes constituted the upper wall of an immense cavity, the lower wall of which was formed by the optic thalamus, the corpus striatum, and all the other parts situate on the level of these two bodies. Of the nervous mass situate above the ventricles, there remained only that which, situate anteriorly to the corpus striatum, forms its anterior wall. Numerous tubercles traversed the two lungs, and several ulcerations appeared on the surface of the small intestine. There was a perforation in the ileum, whence the peritonitis, which terminated the life of the patient.

Remarks.—The lesion, discovered in this case, commenced to be formed after an external force, twenty-five years before the period when it was examined by us. The atrophy of the brain was not probably here the primitive alteration : it succeeded to other alterations of an inflammatory nature, which went on to form immediately after the fall.

The perfect preservation of the intelligence up to the last moment is certainly a remarkable circumstance in a case where so great a portion of the brain had for a long time ceased to exist.

In a similar case, quoted by M. Breschet, which refers to a child four years old, the intelligence was, on the contrary, very much altered : the child was completely idiotic ; it was dumb, though not deaf ; and could not sustain itself on its legs.

It more frequently happens that we find atrophy of only a smaller portion of the nervous mass situate above the ventricles. In this case it is most commonly in one of the anterior lobes that the defect of development exists. Separate atrophy of this lobe has been seen at all ages, from commencing infancy to advanced old age. The following is an example of it, observed by us on an individual seventy-one years old :—

CASE 2.—*Hemiplegia of a long standing—Obtuse state of the intelligence, great difficulty in speaking—Atrophy of the anterior lobe of the left hemisphere.*

A man, seventy-one years of age, entered the La Pitié in a complete state of childishness. We could obtain no information regarding his previous history. We ascertained in him the existence of a complete paralysis, both of motion and sensation, of the right side of the body ; he stammered out some unintelligible words. This man gradually became weak, and died about a month after his admission. During the last eight days of his life, we observed that he coughed, that his respiration was embarrassed, and his tongue had become dry.

Post mortem. The left hemisphere in its anterior fourth was replaced by a cyst with transparent parietes, filled with limpid serum ; one very thin layer of nervous substance separates it from the corpus striatum ; thus it does not immediately form the wall of the ventricle. The left lung was in the state of red hepatisation throughout its entire extent.

Remarks.—There was hemiplegia in this case, though the lesion had attacked only the anterior part of one hemisphere, and the intelligence was disturbed, though the atrophy was much less considerable than in the subject of the first case, where it remained intact.

M. Breschet has published the remarkable case of a girl, fifteen years of age, in whom the two anterior lobes were wanting. At the bottom of, and behind, the membranous pouch which replaced them, the two corpora striata were seen exposed. The head was very well formed.

This girl was plunged into a complete state of idiotcy; it was necessary to dress her and feed her; she was reluctant to walk, though she had the power of moving the four extremities with ease and with equal facility; she was usually sitting, and remained so for entire days, alternately inclining the head from one shoulder to the other; vision was intact; the most perfect indifference existed for agreeable or disagreeable odours.

Here was a case where atrophy of the two anterior lobes did not bring on paralysis, properly speaking. Neither did this paralysis exist in two other subjects, who were still younger, for a knowledge of which we are also indebted to M. Breschet.

In one of these cases the individual, nineteen months old, was able to move his four extremities with ease, only there was observed in him an almost continual flexion of the trunk backward: this child was deprived of sight; after having remained for about four months in this state of opisthotonos, he was seized with convulsions, of which he died.

All the mass of the hemispheres situated above the ventricles was less developed than usual; anteriorly it was completely wanting on both sides, and in its place all that was found were the meninges raised by a great quantity of serum. The head was in every other respect well-formed, only it was somewhat large.

In the other case the child, twenty-two months old, also had the cranium well formed: he was affected with strabismus; motion and sensation were perfect. This child died of a gastro-enterite. The same alteration of the brain was found in him as in the preceding.

Beside these cases, in which the absent nervous substance was replaced by serum in greater or less abundance, other cases may be cited in which this serum no longer existed, and where all that was observed was a greater smallness in the different parts of one of the hemispheres, and particularly of the circumvolutions. This species of atrophy seemed to us sometimes primitive and truly congenital, sometimes consecutive to, and developed after a number of diseases. There are some cases of this kind published by M. Casauvieilh, in his interesting paper on cerebral agenesy *.

The persons whose cases he cites, aged from twenty-seven to sixty-eight years, were all affected for a great number of years back with lesions of motion on one side of the body (hemiplegia, simple or with contraction), and their intelligence was more or less obtuse. The extremities opposite to the atrophied hemisphere had, in their different dimensions, less development than the others.

Instead of an atrophy affecting but one of its hemispheres, the brain may present, in the right and left, at one and the same time, in several of its parts, an arrest of development considerable enough seriously to interfere with its functions. This general atrophy of the brain existed in a remarkable manner in an epileptic patient, whose case is recorded by M. Calmeil †.

In the cases recorded by M. Casauvieilh, the lesion of motion was more developed than that of intelligence. The same also occurred in the following case, seen by us some years since at the La Charité.

---

* Archives Générales de Médecine.

† Journal Hebdomadaire de Médecine, tom. i. p. 225.

Case 3.—*Forty-seven years of age—Hemiplegia of long standing—Intelligence a little weakened—Atrophy of one hemisphere, with hardening of its substance—Death by pneumonia.*

A man, forty-seven years of age, was paralysed in the entire of the left side of the body, when he was admitted into the La Charité under the care of M. Lerminier. This paralysis had existed all his life: he had not, at least, any recollection of when it commenced; all he said was, that in his childhood he could not use his extremities of the left side. There was no trace of contraction; the limbs deprived of motion were manifestly thinner, but shorter than those of the opposite side; the skin covering them had preserved all its sensibility. The intelligence appeared to be a little weak; however, he possessed his reason, and could join in a connected conversation; the functions of the life of nutrition were duly performed. This man was seized suddenly with symptoms of acute pneumonia, of which he died.

Post mortem. The cranium was considerably depressed in the entire of the right side. We had not observed this depression during life. On the right, also, it has less extent in its different diameters, and its walls are manifestly thicker than on the left. The meninges present nothing remarkable; the two hemispheres are different in size: the right evidently smaller than the left. This greater smallness evidently depends on the shrivelling which the middle lobe had undergone, the tissue of which was, at the same time, remarkably dense. The optic thalamus and corpus striatum of the right side, are much smaller than the same parts on the opposite side. The right lateral ventricle contains more serum than the other, and is also larger. The left lung in a state of red hepatisation, in the two-thirds, at least, of its extent.

Remarks.—Was the change, of which the right hemisphere was the seat, in this subject congenital? It may be supposed so. It had left intelligence and sensation almost intact; motion alone was seriously compromised, and, in the paralysed limbs, nutrition was less active, as was proved by the commencement of atrophy in these limbs. What was the cause of this atrophy? Was it merely the want of exercise on the part of the muscles? Was it a less action of the brain on the nutrition of the parts, and this fact may serve to prove the influence exercised on nutrition by the nervous system? In fine, the same cause which, in the fœtus, had produced in one of the sides of the brain an arrest of development, had it interfered, at the same time, with the evolution of the limbs opposite to the atrophied hemisphere?

There was here but simple paralysis: in other cases, where the lesion was precisely similar, the limbs deprived of voluntary motion were, at the same time, contracted. The same phenomena were presented by some of the cases of M. Casauvieilh. We saw this exist, also, in the patient of Bicêtre, whose case has been already detailed. This may also be seen in the following case recorded by M. Boulanger:—

A child, two years old, experienced a constantly increasing difficulty in moving the extremities of the right side: there supervened a state of permanent contraction of these limbs, and particularly of the upper extremity of the right side. The right fore-arm very much contracted on the arm, and it cannot be extended without causing pain. He complains of a fixed pain in the left parietal region; *the intellectual faculties are sound;* he speaks very well, likes to play and converse. He arrived at the age of four years, and then died of pneumonia.

On opening the body, the anterior lobe of the left hemisphere was found, as it were, depressed by *a furrow which was filled by a serous infiltration of the pia mater* (these are the author's own words). The circumvolutions were pressed inwards, changed to a black and yellowish colour; *the septum lucidum did not exist.*

It is to be remarked here, that the alteration of the right hemisphere did not here consist in mere atrophy of its substance; the latter in those parts where it had less volume, presented at the same time a remarkable change of consistence. Was there then a compression and heaping together of the molecules of the nervous tissue, rather than a real lessening of their number; and was the atrophy but apparent? The third case of M. Casauvieilh presents, in this respect, a similar phenemenon, that is, coincidence of a smaller volume and greater density; but in several other cases of his, we see these two lesions no longer go together; the consistence is normal, and yet the nervous substance does not occupy the space it should ordinarily fill.

When the atrophy is still more inconsiderable or more general than in our case and in those of MM. Casauvieilh and Boulanger, the intelligence becomes in its turn more seriously disturbed; it is usually abolished, and the individuals are born idiots, or become so. The following case is in support of this opinion:—

CASE 4.—*Seven years—Idiotcy—Epileptic convulsions—Pulmonary tubercles.*

In the year 1821, there was in the Hôpital des Enfans, under the care of M. Jadelot, a little girl seven years old, who, from birth, had not given the least sign of intelligence. The two lower extremities were much more slender than might have been expected from her age; no voluntary motion could be impressed on them by the patient, who remained constantly lying down; the upper extremity of the right side was habitually the seat of strong contraction. This child did not speak, and it presented all the traits of complete idiotcy; from time to time it was seized with convulsive movements, which bore considerable resemblance to the convulsions of epilepsy; she died of pulmonary phthisis.

Post mortem. The cranium had, more particularly anteriorly, much smaller dimensions, than what is usually seen at the age of this individual.

A copious serous liquid infiltrated the pia mater over the entire convexity of the hemispheres; this liquid had put an interval of several lines between the arachnoid and brain.

The circumvolutions, on the right as well as on the left, but more anteriorly than posteriorly, were remarkable for their small share of development, and at the same time for the smallness of their number; they were shrivelled, and as it were, decayed; the result of this was, that on the different points of their convexity, the cerebral hemispheres did not present a surface, which had every where the same level: this surface was on the contrary singularly uneven; it presented a series of elevations, few in number, and of depressions much more numerous. In most of the depressions the nervous tissue was very dense; it had even in some parts a cartilaginous consistence. The lateral ventricles were very large and filled with a great quantity of limpid serum. The optic thalami and corpora striata were very small; it was particularly on the left, that this defect of development was remarkable; and on this side the optic thalamus was all unequal and wrinkled.

Remarks.—This case presents us, with respect to motion, the same disturbances as the preceding; to this is added a very serious disturbance of the intelligence, which is amply accounted for by the greater degree of cerebral atrophy, and its existence in both hemispheres. The contraction of the right upper extremity is conformable to the greater atrophy of the optic thalamus and corpus striatum on the left than on the right. In these cases of atrophy, as well as in the cases of hypertrophy previously quoted, the cerebellum is unconnected with the brain; to no purpose does the latter undergo the most perceptible modifications in its size; the other is not influenced by it, at least in the generality of cases; for among the cases of M. Casauvieilh, there is one where we see the hemisphere of the cerebellum participate in the atrophy affecting the cerebral hemisphere of its side.

In the case now cited, the lateral ventricles were remarkable for their extreme size, which contrasts with their diminution or effacement, so perceptible in the cases of hypertrophy above detailed.

SIXTH ORDER

OBSERVATIONS ON CANCER OF THE BRAIN.

This affection, characterised by the existence, within the nervous substance, of new products, known by the name of schirrus and encephaloid matter, is rather rare. The remarks which we shall present on it are founded on the analysis of forty-three cases, some of which belong to ourselves, whilst the others are scattered through different medical works.

In these forty-three cases, the cancer had not always for its seat the cerebral hemispheres themselves; thirty-one times it affected these hemispheres; three times the pituitary gland; five times the cerebellum, once the pons varolii; and three times the spinal marrow.

The size of the cancerous masses developed in the nervous centres is far from being always the same; there are some cases where one entire hemisphere was transformed into a cancer; there are others where the accidental product scarcely equals the size of a nut.

This number is equally variable; sometimes there is but one; sometimes several are found, which occupy different points of the encephalon.

Around these cancerous masses, the nervous substance presents an appearance, which is far from being always identical. There are some cases where it presents all the conditions of its normal state; there are others where it is altered, either simply injected in different degrees, or hardened and more frequently softened.

When the cancer affects the periphery of the brain, it may attack the meninges and destroy them; it may again extend its ravages to the bony structure itself. Cases have been seen where it completely destroyed the temporal and frontal bones; others have been seen, where, after having perforated the crebriform plate of the ethmoid bone, it penetrated into the nasal fossæ, and filled the different sinuses which communicate with these cavities. In one case the cancer developed on the side of the lower surface of the brain, escaped from the cranium, sending ramifications through the foramina of its base.

When the cancer is situated so as to touch the nerves, it seldom leaves them intact; sometimes they also undergo the cancerous degenerescence; sometimes they are compressed or destroyed by the tumour which surrounds them.

Among the forty-three cases included in our analysis, there were ten in which the cancer, of which the nervous centres were the seat, had also attacked other organs. In none of these ten cases does the brain appear to have been the primary seat of the disease, and different parts must already have been attacked by it, so that the nervous centres may be affected in their turn. Sometimes also the brain becomes cancerous, only after a cancer had been removed from some part. There was a remarkable case of this nature lately in the wards of the La Charité, in the words of MM. Boyer and Roux:—A man received a blow on the testicle: this organ remained tumefied, and painful, and rapidly underwent the cancerous degenerescence; it was removed. Up to the moment of the operation all the other organs appeared intact. The diseased testicle was scarcely removed, when, all at once, this man, who had hitherto enjoyed a tolerable good state of health, wasted away rapidly; he died, and on opening the body, enormous cancerous masses were found in all the lymphatic ganglia of the mesentery, in the liver, in the spleen, in the lungs, and finally in the brain.

Thus, in this case, external violence acts as a purely occasional cause to develope in the part accidentally irritated, a lesion to which the economy was predisposed; without this predisposition, it would not have produced it. Immediately cancers sprout up from all parts; there is no longer a necessity, in order to give rise to them, for an external irritation, similar to that which had acted on the testicle; but, what is remarkable, this diathesis does not appear, or, at least, the symptoms do not betray it to us, until the organ is removed, in which the cause of the cancer seemed to be enclosed.

The causes under the influence of which the cancer of the brain is developed are not better known than those which produce it in the other parts of the body. There, as elsewhere, a pre-disposition must be admitted, without which the occasional causes remain without influence. These occasional causes themselves are not appreciable, except in a very small number of cases. Thus, out of forty-three cases, there were but two in which the cancer of the brain succeeded to external violence, to which the cranium had been subjected. In none of these cases did it develope itself after an acute disease of the brain, or of its envelopes.

Cancer of the brain has been observed at the most different periods from the age of two years up to that of seventy-seven. Here is what our forty-three cases present to us in this regard.

Before the age of twenty years, eight cases of cancer of the encephalon were observed of which

2 cases were at - - 2 years.
1 - - - - 3
1 - - - - 4
1 - - - - 7
1 case was at - - 11 years.
1 - - - 14
1 - - - 17

From twenty to thirty years, we know of but two cases, one of which regarded a subject aged twenty-one years, and the other an individual aged twenty-nine years.

From thirty to forty years, we find eight cases distributed as follows:

2 cases at - - 33 years.
1 - - - - 34
1 - - - - 36
2 cases at - - 37 years.
2 - - - - 38

From forty to fifty years, we find eleven cases distributed as follows:

1 case at - - 40 years.
1 - - - - 41
3 - - - - 45
3 cases at - - 47 years.
2 - - - - 48
1 - - - - 50

From fifty to sixty years, we find nine cases distributed as follows:

1 case at - - 51 years.
3 - - - - 52
1 - - - - 55
1 case at - - 57 years.
3 - - - - 58

From sixty to eighty years, we find five cases distributed as follows:

1 case at - - 62 years.
1 - - - - 64
1 - - - - 66
1 case at - - 71 years.
1 - - - - 77

In the same manner as all the other accidental products developed in the brain, cancer does not reveal its presence by any characteristic symptoms. According to its situation, size, state of the nervous substance around it, and in a word, according to the manner (and that is altogether vital) in which the brain is affected by its presence, this morbid product is accompanied by different phenomena, and it is much less by their own nature than by their mode of appearance and connection, and by the ensemble of the circumstances of the disease, that we can establish a diagnosis.

These phenomena may regard the intelligence, motion, sensation, and the different acts of organic life.

The alterations of intelligence are by no means constant: far from it, in the greater number of cases observed up to the present time, the intelligence has remained intact. In others, it is disturbed only in the latter period of the disease.

There are cases also, where it is but at intervals more or less remote that the intellectual faculties become impaired; the individuals affected present from time to time either an obtuse state of the intelligence, or a greater or less loss of memory, or a true delirium. In fine, some of the individuals, in whose brain cancer has been discovered, have been affected with lunacy.

Neither are the lesions of motions more constant than those of intelligence; they have been found absent in more than one case. When they do exist, which is the most common case, they generally consist in a paralysis which is established gradually. Sometimes this paralysis is partial, simple hemiplegia, or else paraplegia. This latter species of paralysis took place in a remarkable case cited by M. Esquirol, whether each anterior extremity of both hemispheres was occupied by a cancerous mass.

This paralysis may be simple, or complicated with contractions, either continually, or at intervals.

In several cases, convulsive movements, sometimes partial, sometimes general, come on at intervals.

Finally, in more than one case the existence of attacks of epilepsy has coincided with the development of a cancer in different points of the encephalon. Thus the further we advance, the more we see epilepsy show itself in connexion with lesions the most different, but belonging exclusively to none.

The lesions of sensation are as variable as those of motion and intelligence.—Thus the pain of head, though frequent, is not observed in all cases; it presents the greatest differences with respect to its intensity, sometimes being very slight, and being mentioned by the patient only when he is questioned on the subject; sometimes so intense, that it constitutes the predominant symptom of the disease. Its nature varies as its intensity: it is far from always having that lancinating character which is laid down as connecting itself particularly with cancerous affections. This kind of pain has been rarely remarked in the different cases of cancer of the brain published up to this day.

If we consider this pain with respect to its seat, we shall find that in certain cases it is general, and by no means indicates the point of the brain which is the seat of the lesion; whilst in other cases it exists only on one side, and is then of more value as a diagnostic sign; but if in this case it is explicit regarding the seat of the affection, can it reveal its nature? Certainly not; for it may be produced by several other lesions, and, among them, by a softening, as we have seen. Is it then by its particular character, or by its intensity, that we shall distinguish the pain of cerebral cancer from that which accompanies other affections of the encephalon? We never can attain more than mere probability on this subject.

The pain of cancer of the brain simulates in some cases a neuralgia by the manner in which it radiates, from always the same point, towards other parts of the cranium. As a neuralgia, it may develope itself under an intermittent form, without, however, there being any regularity in its returns. As certain pains called nervous, we have seen it diminish by greater or less pressure made on the points which it occupies. Bleedings, which have no influence on the organic affection of which it is a symptom, may, however, diminish it or even make it disappear for a time. Amongst the cases that have been published, there are some in which we see the pain return, or become exasperated at the return of each menstrual[*] period, then cease or diminish, once the blood has commenced to flow. In all these cases, however, the organic lesion continues the same; but around it the state of the nervous substance is continually changing.

---

[*] No doubt at each menstrual period the modification experienced by the uterus is felt through all parts of the system. Numerous facts might justify this assertion: here is a striking example of it:—We know a lady in whom, at the return of the menses, the skin of one of her arms, which has the mark of a cautery, reddens and becomes the seat of very severe itching.

The pain of which the head is the seat in cancer of the brain, may be repeated in other parts. Thus in certain cases individuals labouring under this affection have experienced in the trunk and extremities pains more or less acute, which simulated very closely rheumatic or nervous pains. Others have presented an extraordinary exaltation of the cutaneous sensibility; the skin could not be touched without a most painful impression being felt, whilst at other times, on the contrary, the skin lost all sensibility. Sometimes, in fine, an insupportable itching tormented the patient. Thus from one and the same lesion, the brain, in each individual, reflects on the organs the infinite diversity of its impressions, by the diversity of the phenomena which it occasions there.

The functions of the organs of the senses have been changed in some cases, though the nerves appertaining to them were not comprised in the cancerous degenerescence. Nothing can be more remarkable in this respect than a case published in a periodical regarding a girl seventeen years of age, who lost successively the use of all her senses, and in whom motion was at the same time destroyed, whilst in the midst of all this disturbance, the intelligence remained intact.

In three cases of cancer of the pituitary gland, which have been published, there was amaurosis; but this circumstance depended no doubt on the participation of the optic nerves in the disease.

In one of these cases, the first symptom had been a gradual weakening of vision, accompanied by acute pains in the forehead. For three years nothing else was observed; there then came on stupor, more and more profound, in which the patient died.

With respect to the life of nutrition, nothing particular is observed. In some individuals, obstinate vomiting has been observed, a phenomenon which is found in a certain number of cerebral affections, acute or chronic, very different from each other.

The pale yellow tint of the face is not here more constant than in other cancerous diseases.

Nothing is more variable than the duration of cerebral cancer; at times some months only elapse between the appearance of the first symptoms and death; sometimes these symptoms are prolonged for several years before bringing the fatal termination. The latter may come on in two ways: either the signs of an acute encephalitis come on, and the individuals die either of coma, or of convulsions, or else they waste away gradually; their strength is lost, all their functions become deteriorated; intervening inflammations attack the lung, or the primæ viæ; eschars form on the skin, and death is the result of all these combined causes of destruction.

The following cases collected by ourselves, may be added to those which science already possesses.

CASE 1.—*Pain of head of long standing, limited to one side of the cranium—Hemiplegia—Intermitting symptoms of cerebral congestion—Cancer in the right hemisphere.*

A man, fifty-eight years of age, of a strong constitution, felt for the first time, fifteen years since, an acute pain which spread from the right temple over the entire right side of the head and face. This pain remained during six weeks. The following years, it returned several times without having any thing regular either in its returns or in its duration. It appeared, two months ago, with more violence than ever: it soon became sufficiently intense to compel the patient to give up his occupations. A blister applied to the temples quieted him for some time. Having entered the La Charité, 15th November 1821, the patient was in the following state:—

Countenance yellow, dejected; intellectual and sensorial faculties intact, except that there existed from time to time a temporary diplopia; muscular strength preserved; violent pains in the right side of the head, extending sometimes to the corresponding side of the face, becoming worse at intervals, so as to make the patient scream, sometimes lancinating, sometimes resembling a flame of fire passing through the head; right eye habitually weeping; pulse strong and slow; digestion and respiration natural. (Anodynes to the right temple, mustard pediluvia, blister to nape of neck).

Though the state of the patient appeared nearly the same during the night, the pain became insufferable. The 21st November, the patient having got out of the bed, felt his legs bend under him and fell. The next day, 22nd, his eyes were closed; he answered no questions. (Thirty leeches to anus, sinapisms, and purgative lavement.)

The 23rd, stupor; answers questions; right upper eyelid paralysed; right commissure of the lips drawn up; no voluntary movement in the extremities of the left side; no deviation of the tongue; preservation of the sensibility; pain of head much less. (Arnica, senna lavement.)

From this period the preceding symptoms continued; besides the patient became rapidly debilitated; his features became altered; his countenance assumed a still more yellow tint; his pulse became soft, accelerated, and presented, besides, from one day to another, the greatest variations; the tongue was alternately brown and vermilion colour, dry and moist; several times the patient was found plunged into a profound coma, with a tracheal râle, which seemed to announce his approaching dissolution; the day after this râle no longer existed or was much less, and the intelligence was re-established; the patient no longer complained of pain of head; he was in a state of apathy, or as it were, indifferent to his situation; he resembled a person who had just got out of a profound sleep; his eye was closed and void of expression (blisters to the chest and leg, decoction of polygala, laxatives); the adynamic state went on; the stupor and râle become continual; the extremities become cold, and the patient sinks.

Post mortem. The sub-arachnoid cellular tissue was infiltrated with a moderate quantity of serum. Viewed externally the circumvolutions of the right hemisphere seemed flattened. When cut in thin slices to the level of the corpus callosum, the brain presented nothing remarkable, except that there flowed a considerable quantity of serum from each lateral ventricle. Anterior to the optic thalamus of the right side was a small softening of the size of a twenty sous piece: there, the cerebral substance, slightly yellowish, was reduced to a diffluent pulp, but outside the right optic thalamus, and the corresponding corpus striatum, there existed another species of alteration. For the extent of four fingers' breadth in length, and of two or three in breadth, there appeared a surface of a reddish grey, wrinkled, uneven appearance, presenting altogether the aspect of certain fungous growths of the dura mater. On cutting into this part, the scalpel experienced a resistance similar to that which scirrhus growths of the stomach and liver oppose to it. Here there was found a tissue as it were areolated, of a bluish white, half transparent, very hard, and marked here and there with small cavities full of a liquid similar in appearance to apple-jelly (scirrhus in the state of crudity or softening.) In other points there was seen a tissue of a dirty white colour of considerable consistence, and traversed by reddish lines crossing each other in different directions. In other points, in fine, nothing was found but a sort of reddish bouillie. This alteration prevailed, in depth, from the level of the optic thalamus to near the base of the skull. The cerebral substance, healthy around it, was connected to it by continuity of tissue. Parietes of the left ventricle a little hypertrophied.

Remarks.—We see in this case a violent hemicrania appear single and unattended by any other ailment for several years, and thus isolated from every other symptom, assume all the character of a true neuralgia; it is, however, very probable that it depended on the organic lesion of which the brain was the seat.

The alteration of motion came on suddenly, as if the cerebral substance had become the seat of hemorrhage or softening. It is not in this way that paralysis usually commences, which depends on a cancerous affection of the brain, and that is, no doubt, one of the most remarkable circumstances of this case. What is not less worthy of attention is, those species of periodical crises, the probable result of an intermittent cerebral congestion, during which the patient sunk into a profound coma, presented the tracheal râle of one in the last agony ; the latter disappeared as well as the coma, the intelligence was restored, and immediate death was no longer to be apprehended. This we observed several times ; death came at last in consequence of the continuance of a similar crisis.

Case 2.—*Hemiplegia of long standing preceded by pains occupying the side of the cranium opposite to the paralysis—Intelligence perfect; suddenly a violent attack of epilepsy, followed by profound coma, in which the patient died.*

A man, forty-seven years of age, was affected with complete hemiplegia of the right side when he was seen by us. This man, who still retained all his intelligence, told us that for the last three years he habitually felt in the left side of the cranium a pain which he attributed to rheumatism ; he had had several attacks of this latter affection. The pain which he felt never entirely ceased ; but though in general rather dull, it became occasionally much more acute, and then was accompanied by copious vomitings of a green substance. He considered this periodical exasperation of his headach a megrim.

For two years he experienced no other uneasiness but this pain of head, which did not, however, prevent him from attending to his usual avocations. At the end of this time, and after one of these megrims, which had been very violent, and which was continued beyond the ordinary time, he began to feel in the hand and foot of the right side an annoying formication, which went away of its own accord after some days. Two months after, he had another attack of megrim as violent as the preceding, and after it the same sense of formication reappeared. But this time it no longer ceased, and the right extremities soon became weaker than those of the left side, and then they became completely paralysed. The paralysis was not complete till about eight months after the first appearance of the formication.

When we saw the patient he had his pain of head constantly ; the muscles of the face were the seat of slight convulsive twitches, resembling a sort of tic, which were not perceived by the patient ; the extremities of the right side were completely deprived of motion, and the skin covering them was much less sensible than that of the extremities of the left side ; the organs of the senses not affected ; pulse sixty-eight, regular and full.

Ten or twelve days passed on without the state of the patient presenting any change. At the end of this time the pain of head became suddenly aggravated ; his features were very much altered by the pain ; he cried out aloud for some relief ; he vomited during the time an enormous quantity of green bile ; the pulse had become very frequent, and the muscles of the face became much more violently convulsed than usual. In this state we were desirous to try the effect of a bleeding ; sixteen ounces of blood were taken without any amendment. A little time after this the patient suddenly lost all consciousness, convulsive movements appeared, and all the phenomena characterising an epileptic attack were observed. The convulsions soon ceased, but they were succeeded by a profound coma, in which the patient died during the night.

Post mortem. A cancerous mass, the size of a pullet's egg, possessing the same characters as those described in the preceding case, occupied the central part of the left hemisphere of the brain ; it had taken possession of the optic thalamus and corpus striatum of this side ; the entire encephalic mass was very much injected. The organs in the other cavities were sound.

Remarks.—This tedious disease terminated by a violent attack of epilepsy, and commenced as that detailed in the first case, by a headach which for a long time did not appear connected with any serious lesion. Between these extreme periods we observe a paralysis occurs, which is established gradually, and commences after one of the aggravations of the headach; the intelligence continued more perfect here than in the subject of the first case; we shall see, on the contrary, the disturbance of this function very well marked in the subject of the following case.

Case 3.—*Temporary signs of mental alienation—Intelligence habitually very obtuse—Contraction of the extremities of the right side—Prostration of strength becoming greater, and death.*

A woman, forty-eight years old, entered the La Charité with her intellects so dull that we could obtain no information from her respecting the previous history of her case. The questions put to her she answered very vaguely: she scarcely knew where she was. All we could learn from those who brought her was, that when she had her intelligence, she had had at different times attacks of mania for which she was admitted twice at the Salpétrière. By degrees she fell into a sort of idiotcy, and it became necessary to attend her as a mere infant. She had also strong contraction of the upper and lower extremities of the right side. Since her admission, this woman was very much debilitated; tongue dry, and an eschar already formed on the sacrum. The following days the adynamic state became more and more marked, severe diarrhœa came on, the respiration became stertorous, and the patient died shortly after.

Post mortem. The vault of the cranium had been hardly removed, and the dura mater cut into when we were struck with the uneven appearance of the circumvolutions of the middle lobe of the right hemisphere; they were very much deformed, and very different from those of the opposite side. We found them very hard; they sounded under the scalpel. This unusual hardness extended in depth to a little above the level of the centrum ovale of Vieussens, the optic thalami and corpus striatum not being at all affected. In every part where the cerebral substance was thus hardened, it was at the same time changed into a fatty (*lardacé*) tissue which had all the characters of scirrhus; in several parts this tissue was marked by small cavities, which were filled with a greyish white substance, like glue. Three or four cretaceous tubercles, surrounded by a black indurated tissue, were found in the summit of the two lungs. The mucous membrane of the stomach presented a slate-coloured tint, and a greater consistence than natural in all the pyloric portion; towards the great cul de sac, it was reddish and soft. The mucous membrane of the end of the ileum, and that of the cæcum were very much injected without being softened.

Remarks.—Here is a case in which the symptoms of cancer of the brain are no longer the same, in some respects, as in the first and second case. At first, instead of simple paralysis, there was contraction of the limbs; but what particularly distinguishes this case from the two preceding is, the disturbance which the intelligence underwent, namely, those temporary alterations of reason which terminated finally in a kind of madness.

In these three cases the nature of the lesion was identical; but it had not the same seat: in the two former the circumvolutions remained intact, in the third they were affected; and, without intending to draw any general consequence, we cannot help remarking that it was only in the case where the circumference of the brain participated in the cancerous degenerescence that the intellectual faculties were compromised.

It is not pathological anatomy that can here inform us, why, in the two first cases, there was simple paralysis, and contraction in the third case. We cannot but remark, also, the entirely different manner in which death came on in these three cases. Here we observed no coma, no epileptic or other convulsions; we find merely prostration of strength gradually increasing, induced in some degree, no doubt, by the state of the digestive tube.

CASE 4.—*Cancer of the brain, which was repeated in the kidneys, and in several of the bones—Paralysis of one of the upper extremities—Headach—Remarkable state of apathy.*

A man, forty-five years old, complained to us, when entering the La Charité, of a pain in the left coxo-femoral articulation; the parts surrounding it were the seat of considerable swelling; we found also most of the signs of fracture of the neck of the femur; shortening of the limb; turning of the point of the foot outwards; inability to flex the thigh on the pelvis, the leg being extended on the thigh; the left great trochanter more projecting, and nearer the crest of the ileum than that of the opposite side: all motion of the joint impossible. The patient assured us he had not had a fall; that he never had suffered any external violence; the face had a very remarkable pale yellowish hue. Another phenomenon struck us, namely, complete paralysis of the entire left upper extremity. The patient told us that he had insensibly lost the use of this limb; about six or seven months since, he perceived that he could not use it with as much ease as the other: from time to time he experienced acute pains in it. He told us that, for the last five or six months, he was annoyed by an almost constant headach, principally seated in the right side of the cranium: he complained of no pain in any other part of the body. The digestive and respiratory functions were intact; pulse was somewhat accelerated.

This man, who seemed to labour under an affection purely surgical, complained of nothing; he scarcely answered the questions put to him; we were struck every morning with the state of apathy in which he seemed to be sunk. In consequence of lying constantly on his back, his sacrum became excoriated; this excoriation was ultimately converted into a large ulcer, which went on increasing in depth and breadth. From this time he became weaker, his tongue dry and black, his teeth and lips were covered with dark coloured crusts. For the last twenty-four hours of his life, his respiration became remarkably slow; each inspiration seemed to be his last, so long was the interval between them, and he died.

Post mortem. We found the left optic thalamus, and nervous substance surrounding it, changed into a lard-like tissue, possessing all the characters of cancerous matter. No other morbid change was found in the encephalon. A frothy, colourless serum flowed in great abundance from the two lungs. The mucous membrane of the stomach had for the greatest part of its extent a slate-coloured tint. The left kidney was occupied, for at least the three fourths of its extent, with a dull white tissue traversed by numerous reddish lines: being hard in certain parts, this tissue resembled in other parts softened cerebral substance: the degenerescence of the parenchyma of the kidney into encephaloid tissue could not be mistaken. The same alteration existed in the right kidney, but to a less extent.

The head of the left femur was entirely separated from the body of this bone; in the place of its neck, the bony substance of which was entirely destroyed, there was found a half-liquid substance, of a brick-red colour, similar to the reddish detritus resulting from the softening of the encephaloid tissue. A similar substance filled the interior of the head of the femur. This head merely consisted of a hollow sphere with very thin parietes; it is probable that, in a little time more it would have entirely disappeared. The upper extremity of the lower portion was marked with numerous asperities.

The third, fifth, sixth, and seventh ribs on both sides, presented several solutions of continuity, and in the place which should have been occupied by the destroyed bony tissue, there was found a reddish substance similar to that interposed between the head of the bone and its body. The sixth rib on the right side presented three similar solutions of continuity. On examining the bones of the cranium, we found that the right parietal bone presented at its anterior and middle part, an irregularly rounded perforation, large enough to admit the end of the thumb: this was filled by the same reddish matter already described. This substance was spread over the dura mater to an extent at least three or four times greater than that of the perforation itself: beneath it the dura mater was sound. The first piece of the sternum was in a great measure changed into this same reddish substance.

Remarks.—A pain of head, of several months' standing, but which was no longer exasperated at intervals as in the preceding cases; a paralysis gradually established, the existence of which could be ascertained only in the upper extremity opposite to the injured hemisphere; finally, towards the latter period, a remarkable kind of apathy, such were the only symptoms indicating in this individual cancer of the brain: but this cancer was only one of the elements of the disease under which he laboured. The reader's attention is directed to the repetition of this same cancer, both in the bony system and in the urinary organs.

CASE 5.—*Cancer of the brain, liver, spleen, stomach, uterus, ovaries, and of a great number of lymphatic ganglions.*

A woman, about forty years of age, presented nothing else, during her stay at the La Pitié, but the ordinary signs of cancer of the uterus: with respect to the nervous centres she evinced no appreciable functional disturbance: she died of pleuritis of the right side which terminated in a sero-purulent effusion.

Post mortem. A small cancerous mass, the size of a pea, in the left corpus striatum; another, the size of a nut, at the junction of the middle and posterior lobes of the right hemisphere: effusion into the right pleura; numerous cancerous masses in the liver and spleen; scirrhous thickening of the tunics of the stomach around the pylorus; cancerous degenerescence of the body and neck of the uterus, and also of the ovaries.

Remarks.—In this case, as in the preceding, the cancer found in the brain was but an element of a more general disease. The absence of cerebral symptoms may be accounted for by the small size of the cancerous masses found in the brain.

THIRD BOOK.

DISEASES OF THE CEREBELLUM.

THESE diseases are much rarer than those of the cerebral hemispheres. We collected but sixteen in a period of fifteen years of attendance in the hospitals. We shall record them and bring in juxta-position with them those already published by different writers; we shall endeavour to draw from the comparative study of these different cases some consequences relative to the functional disturbances occasioned by lesions of the cerebellum.

SECTION I.

OBSERVATIONS ON HEMORRHAGE OF THE CEREBELLUM.

IN the six following cases, hemorrhage of the cerebellum existed single three times, and three times it coincided with an effusion of blood into one of the cerebral hemispheres.

CASES.—*Effusion of blood into the right hemisphere of the cerebellum—Hemiplegia on the left side, accompanied with loss of consciousness—Death fifty hours after the appearance of the first apoplectic symptoms.*

A female, twenty-one years of age, was treated at the La Charité for a chronic gastritis: she evinced symptoms of it for the last two years. One evening at six o'clock, a little time after having eaten, and before going to bed, she fell, suddenly deprived of consciousness and motion; after about an hour she recovered the use of her senses, but could not move the extremities of the left side. On seeing her the next morning her state was as follows:—Face injected equally on both sides; contraction of the pupils; vision preserved; air of stupor; she answers questions with correctness; no embarrassment of speech. The two extremities of the left side completely deprived of voluntary motion; they presented no trace of contraction; sensibility of the skin covering them impaired. Pulse seventy-five and full; heat of skin natural; respiration hurried (thirty to thirty-four every minute). This girl seemed to us to have been struck with cerebral hemorrhage; she was bled to sixteen ounces.

At the following visit her state was much worse; she was sunk in a profound coma; does not any longer answer questions; skin insensible to the action of excitants, on the right as well as on the left. The extremities of the right side, when raised, sustain themselves for some seconds in the air, and fall back gradually; not so the extremities of the left side, which fall as inert masses; respiration very stertorous. In the course of the day the symptoms of carus became more and more marked, and the patient died at eight o'clock at night.

Post mortem. Cranium.—Sub-arachnoid cellular tissue of the convexity of the cerebral hemispheres very much injected. The latter present no appreciable alteration, except considerable sandiness of their tissue. In the central part of the right hemisphere of the cerebellum, was found an effusion of blood which formed in the nervous substance a cavity large enough to hold a pullet's egg. Around this cavity the tissue of the cerebellum was red and softened for the space of three or four lines.

Thorax.—Sero-sanguinolent infarction of the two lungs, and particularly of the left. Heart and its appendages natural.

Abdomen.—Scirrhous induration of the sub-mucous cellular tissue of the stomach in all its pyloric portion; beneath this tissue considerable hypertrophy of the muscular tunic, which was divided into large fasciculi by whitish lines belonging to the thickened cellular tissue. In some parts, no trace of the fleshy tunic, and there is nothing found but a homogeneous scirrhous mass. The mucous membrane of a slate-colour hue, and thickened.

CASE 2.—*Hemorrhage into the right hemisphere of the cerebellum—Sudden loss of consciousness—Hemiplegia on the left side—Death very rapid.*

A man, thirty-eight years of age, entered the La Charité in the course of the month of March, 1824, presenting all the symptoms of an organic affection of the heart. A well-marked bruit de soufflet was heard at each contraction of this organ. After complaining for some days of dizziness and headach, the precise seat of which he was unable to point out, he was struck with a violent fit of apoplexy: coma, sudden and profound; general insensibility to external stimulants. As yet, no real paralysis except on the left side; if the limbs of the right side be raised, they fall again but slowly; if those of the left side be raised, they fall suddenly, as inert masses. On pinching the skin severely, the extremities of the right side are seen to move, at the same time that the muscles of the face contract, and a slight moan is heard; on the contrary, the extremities of the left side are immoveable.

Such was the state in which we saw the patient at our visit, about fifteen hours after the attack; the respiration was very stertorous; pulse not frequent, but compressible; it presented many irregularities; this state appeared to us to be connected with the affection of the heart. He died a few hours after the visit.

Post mortem. Cranium.—No appreciable lesion in the cerebral hemispheres, nor in the membranes covering them. Right hemisphere of the cerebellum transformed into a sort of pouch filled with black blood similar to currant-jelly.

Thorax.—The heart presented an unusual size, depending on the anormal state of the auricles; they were both considerably dilated, and their parietes very much hypertrophied; the right auriculo-ventricular valve was hard and thickened, particularly at its free edge. In the left, the mitral valve was still more thickened, cartilaginous in some points, and bony in others. It constituted a ring or immoveable diaphragm, through the opening of which the index finger could scarcely be introduced. The aortic valves were ossified at their base. The ventricles preserved their normal state.

CASE 3.—*Effusion of blood into the left hemisphere of the cerebellum—Hemiplegia on the right side—Intelligence dull—Subsequently a fall—State of coma—Death.*

A woman, seventy-five years of age, entered the La Charité in the following state:—Countenance pale, expressive of stupor; state of the intelligence very dull; complete paralysis of the extremities of the right side; tongue dry and brown; diarrhœa; pulse frequent; skin hot. We obtained no information on the preceding history.

For the five or six following days no change took place. At the end of this time, the patient, wishing one morning to leave her bed, fell, and was deprived of consciousness; from that time there was coma; general resolution of the limbs; death two days after the fall.

Post mortem. Cranium.—Pia mater covering the convexity of the cerebral hemispheres was infiltrated with serum; there was a great quantity also in the ventricles.

Clots of blood filled the occipital fossa of the left side; this blood escaped through a rent which was perceived in a point of the external posterior part of the circumference of the left hemisphere of the cerebellum. By pressing on this hemisphere, more was made to flow from it. The rent just alluded to led us by a canal which was fistulous, short, and filled with blood, in the midst of a cavity formed in the substance of the lobe of the cerebellum itself, and large enough to admit at least a large nut. This cavity contained black blood, half liquid, half coagulated. Its parietes were lined by a reddish membrane of about a line in thickness, easily detached from the subjacent tissue. Around this cavity, the substance itself of the cerebellum was not softened, and had not undergone any alteration.

Thorax.—Considerable infarction of the lungs. Hypertrophy of the parietes of the left ventricle of the heart; some points of ossification towards the adherent edge of the sigmoid valves of the aorta.

Abdomen.—Reddish softening of the mucous membrane of the stomach towards its great cul de sac. The cavity of the uterus filled with blood, and the tissue of the body of this organ intensely red.

CASE 4.—*Double effusion of blood, one into the left hemisphere of the brain, and the other into the left hemisphere of the cerebellum—Hemiplegia on the right side.*

A man, sixty-three years old, was struck, on leaving the table, with an attack of apoplexy. He was brought the same evening to the La Pitié. When we saw him the following morning, he had partly recovered consciousness; he understood the questions put to him, but answered stammeringly, and in a way almost unintelligible. The left commissure of the lips drawn up; we could not prevail on him to put his tongue out. Right eye lid more depressed than the left; sensibility of the two sides of the face apparently equal; sees equally well with both eyes; arm and leg of the left side capable of motion of every kind, but the extremities of the right side remained immoveable; all possible positions were given them, without the slightest resistance being made; the skin covering them felt less acutely than on the other side. Respiration high and frequent (bleeding to sixteen ounces, purgative mixture, sinapisms to the lower extremities).

The following morning we found the patient in the same state. Blood drawn not buffed; purgative acted well (thirty leeches to the neck, blister to each thigh).

During the day new symptoms appeared. The patient, who, till then, had remained in a state of apathy, began to be very much disturbed, and to rave; he cried and spoke incessantly. Towards evening he fell into a state of coma and died in the night.

Post mortem. The pia mater, covering the convexity of the hemispheres, was very much injected; this injection more marked in the left than in the right. The grey substance of the circumvolutions showed a well-marked rose-coloured tint. About one inch below the circumvolutions of the left hemisphere of the brain, there appeared an enormous cavity filled with black blood half coagulated; this cavity terminated on the level of the centrum ovale of Vieussens; it occupied all the middle lobe, and a little of the exterior and posterior lobes. Around it the cerebral substance was as it were ecchymosed for a space of four or five lines; it lost its consistence only for the space of one or two lines from the cavity; no membrane lined the parietes of the latter. No other lesion existed in the cerebral hemispheres; much serum accumulated in the ventricles.

A second effusion of blood existed in the centre of the left hemisphere of the cerebellum. The accidental cavity produced by it might admit a nut; around it the tissue of the cerebellum was considerably injected without being softened. However, a stream of water poured on the thin parietes of this cavity, discovered there a great number of red or whitish filaments, resulting from the tearing experienced by the nervous substance.

CASE 5.—*Two attacks of apoplexy, three months intervening between each—Hemiplegia of the right side after the first—Apoplectic cyst in the left hemisphere of the cerebellum—Recent hemorrhage in the right hemisphere of the brain.*

A woman, aged sixty-seven years, had had an attack of apoplexy two months and a half before entering the La Charité. After this attack, of which the symptoms could not be narrated to us with sufficient precision, she remained paralytic on the right side. When we first saw her, motion was entirely abolished in the two extremities of this side, and their sensibility impaired; intelligence and speech perfect; the senses not affected. After remaining fifteen days in the same state, she was struck with a second attack of apoplexy, of which she died in the course of some hours.

Post mortem. An immense effusion of blood into the right hemisphere of the brain; it took possession of the optic thalamus, the corpus striatum, and a considerable portion of the nervous mass above and external to these parts; the effused blood has the colour and consistence of currant jelly; the effusion evidently quite recent.

In the left hemisphere of the cerebellum, on the contrary, was another lesion of an older formation, indicating that an old hemorrhage had taken place in this part. The cavity here is large enough to admit a nut, containing a clot of blood of a brown red colour, and solid, around which was formed a membrane entirely resembling a serous one; around this cavity the substance of the cerebellum is a little soft and yellowish.

CASE 6.—*Double hemorrhage, one of which is in the right hemisphere of the cerebellum, and the other in the left hemisphere of the cerebrum—Hemiplegia on the right side—Loss of consciousness.*

A hotel keeper, forty-nine years of age, fell in the street deprived of consciousness, after having indulged in excessive drinking. He was instantly conveyed to the Maison de Santé, and was bled to a considerable amount. For the first hour after the bleeding there seemed some return of consciousness, which, however, was soon again succeeded by profound coma.

The following morning when we saw him, he was in a state of stupor from which nothing could arouse him; the strongest pinching seemed to have no effect on him; vision gone; the loudest noises near, his ear produced no movement in him; the four extremities were immoveable, in a state of relaxation, and seemed as incapable of motion on one side as on the other. Still we were assured that the evening before, after being bled, he moved the extremities of the left side with ease, whilst those of the right side seemed paralysed; face red, injected; pulse hard and frequent; skin hot. We had him bled again to twenty ounces, and ordered twenty leeches to be applied after the bleeding to each mastoid process, which were let bleed the entire day, whilst a bladder full of ice was applied to the head, and sinapisms to the lower extremities.

Towards the end of the day the patient emerged from his state of coma; he seemed to recover a little intelligence. When we saw him again, his eyes were open, and he seemed to pay some attention to the questions addressed to him; however, he seemed not to understand them, and did not answer. The left commissure of the lips was dragged, and the tongue when put out of the mouth inclined to the right; he moved the left extremities with ease; those of the right side were completely deprived of motion, and the sensibility of the skin covering them was very much impaired; the pulse was become slow; the respiration hurried, but not stertorous; neither was it so the preceding day. (A blister was applied to the nape of the neck, ice to the head still continued.)

In the course of the day, the patient relapsed into coma, and he died in the night. Up to the last moment he had the power of moving the extremities of the left side.

Post mortem. A large effusion of blood occupied at least the third of the left cerebral hemisphere; it commenced a little beneath the circumvolutions which were intact, and affected the optic thalamus and corpus striatum; it made its way into the left lateral ventricle. The septum lucidum was not torn.

A second effusion of blood was discovered in the right hemisphere of the cerebellum, and occupied the half of this hemisphere; it was nearer to the upper than the lower surface.

Remarks.—In the six preceding cases, the hemorrhage of the cerebellum differs in nothing, with respect to the symptoms, from hemorrhage of the cerebrum.

In all these there is paralysis, and it occurs on the side opposite to that on which the effusion of blood takes place, except in the last case, which forms an exception. From these facts, we feel warranted in concluding that the influence of the cerebellum crosses, as well as that of the brain, and yet the fibres of the spinal marrow which enter into the corpora restiformia, do not come from the opposite side of this cord. The argument which had been considered available to explain the crossing influence of the brain, is no longer so here.

The intelligence presents in its disturbances the same varieties as in the cases of hemorrhage of the brain, so that the disturbance of this faculty seems to depend less on the seat of the lesion than on its intensity.

The sensibility presents no particular disturbance; it is merely impaired or destroyed, as in cases of cerebral hemorrhage.

With respect to the genital apparatus, it presents nothing remarkable, except in the woman who forms the subject of the third case. In her there was considerable congestion of the uterus. We satisfied ourselves that in the males there was no erection of the penis, because they were entirely uncovered, and examined naked, in order to ascertain the state of the lower extremities.

With respect to the commencement of the disease, it is still the same as in the individuals whose brain, properly so called, is the seat of hemorrhage. Thus we see our patients fall suddenly deprived of consciousness, and become at the same time struck with paralysis.

Let us now add to these six cases observed by ourselves the other cases of hemorrhage of the cerebellum published up to the present time.

We have found in medical authors twenty-two cases of hemorrhage of the cerebellum, nine of which were in the middle lobe, and thirteen in the lateral lobes.

Of the nine cases relating to hemorrhage of the middle lobe, six have been published by M. Serres *. In these six cases, all the signs of violent apoplexy were observed; nothing particular is mentioned regarding the disturbances of motion.

A seventh case of hemorrhage of the middle lobe has been mentioned by Dance †, in his paper on acute hydrocephalus. The subject of this case was struck with apoplexy; no account is given regarding the movements of the limbs.

An eighth case, relative to this hemorrhage, was published by M. Bayle. The patient suddenly lost consciousness, but he was not paralysed; at least, M. Bayle assures us, that he drew back his limbs instantly when they were touched. This individual died comatose on the fifth day of his attack, after having exhibited, on the third day, convulsive movements in the lower extremities, and some rigidity towards the nape of the neck.

We read in the *Clinique des Hôpitaux* (tom. i. No. 70), a case of M. Guiot, in which there is not found, as in eight others, any other lesion than an effusion of blood into the middle lobe of the cerebellum. The subject of the case had an attack of apoplexy. Before he was struck, he walked unsteadily, and, after the attack, he remained hemiplegic on the left side.

Thus, then, in these nine cases of hemorrhage of the middle lobe of the cerebellum the paralysis is absent once; it is limited to one side another time; the seven other times, the limbs seem to be in a general state of resolution, as happens in large cerebral hemorrhages.

In these nine cases, intelligence and sensibility present the same modifications as they would have presented, if the hemorrhage were seated in one of the cerebral hemorrhages.

The genital apparatus is, on the contrary, modified very particularly in seven of these nine cases, whether male or female.

First, in the male, M. Serres saw five times (the subject of his sixth case was a female) the phenomenon of erection coincide with hemorrhage of the middle lobe. This same phenomenon was noted in the case published by M. Guiot. Still further, in this case, the patient, before the attack, was attacked by continual erections and frequent pollution.

The female who formed the subject of M. Serres' case was seventy years of age. Her *menses reappeared* at the time she was struck with apoplexy; after death, her uterus was found filled with blood, and the tubes and ovaries considerably injected.

---

* Anatomie du Cerveau, tom. ii.

† Archives de Médecine, Jan. 1830, p. 42.

We shall now pass on to the analysis of the thirteen cases, where the hemorrhage took place in one of the hemispheres, or of the lateral lobes of the cerebellum.

These cases, as also the sex already cited, may be divided into two series : in the first, the hemorrhage of the cerebellum exists without cerebral hemorrhage ; in the second, these two kinds of hemorrhages co-exist.

The first of these series comprises seven cases: in three of them only is there paralysis, and in all there it took place on the side opposite to the seat of the effusion into the cerebellum. Of these three cases, two belong to M. Serres. The right hemisphere of the cerebellum was the seat of the hemorrhage, and there was hemiplegia of the left side *.

The third case was published by Dr. Cazes in his Thesis †. The subject of his case was a female, seventy-four years of age, who, after having had for some time a great tendency to stupor, lost consciousness quite suddenly, and fell into a profound carus. When the extremities were pinched severely, those of the left side were seen to perform considerable movements ; the right lower extremity continued entirely motionless ; the upper extremity of the same side moved, but in a manner almost imperceptible. This woman died eight hours after having been struck. On examining the body, M. Cazes found the left lobe of the cerebellum changed into an immense cavity filled with coagulated blood.

In the four other cases of hemorrhage of the cerebellum, without co-existence of cerebral hemorrhage, there is no mention of hemiplegia. Thus, one of these four cases, which belongs to Morgagni ‡, refers to a man who was found dead, with the upper extremities strongly contracted ; there was an effusion of blood into each of the lateral lobes of the cerebellum.

Another of these cases was attended by Dr. Sedillot §, in a child seven years old, who, after being exposed to a burning sun, was suddenly seized with acute pains towards the occipital region : he died a quarter of an hour after the appearance of the pains. An effusion of blood was, in this case, in the centre of the right lobe of the cerebellum.

A third case, reported by Dr. Cafford ||, contains so few details, that it can be of no use in solving the question now before us. It is merely said, in this case, that in an individual who *died of apoplexy, blood was found effused on the surface of the cerebellum and into its grey substance.*

With respect to the fourth case, published by Dr. Michelet in his Thesis ¶, it is deserving of all our attention.

This was the case of a girl eighteen years of age, who, two years before her death, had had an attack of apoplexy, the result of which was *amaurosis without any other paralysis,* and habitual headach. An apoplectic cavity of an old standing was found in the right lobe of the cerebellum.

Let us now pass to the cases in which there was, at one and the same time, hemorrhage into the cerebellum and the cerebrum. Eight cases of this kind have been published.

In one of these cases only the effusion of blood took place into the hemispheres of the cerebellum and cerebrum of the same side ; it was on the left, and there was observed a hemiplegia on the right, the left extremities retained all the freedom of their movements **.

---

* Anatomie Comparée du Cerveau, tom. ii. p. 215.

† Essai sur la Paralyse, par Felix Cazes, 1824, No. 3.

‡ De Sedibus et Causis Morborum, Epist. ii. § 22.

§ Bibliothèque Médicale, tom. xlii.

|| Archives Générales de Médecine, tom. xxii.

¶ Essai sur les Rougeurs de la Substance Cérébrale, Thesis de la Faculté, 1827, No. 59.

** Chamboyron, Dissertation Inaugurale, 1823.

In the seven other cases it was in the opposite hemispheres of the cerebrum and cerebellum that the hemorrhages took place.

Thus, there was observed, in the wards of M. Piorry, the case of an individual, who had at first an attack of apoplexy, with hemiplegia on the right side; a year after he had a second, but this time it was the extremities of the left side which were paralysed. To account for these two successive paralyses, M. Piorry found two lesions, the one an old one, in the left lobe of the cerebellum; it was an old apoplectic cyst; the other recent, in the right lobe of the cerebrum: it was a softening*.

In this case the crossing influence of the cerebellum on motion is quite evident, and the successive manner in which the hemorrhage took place in the cerebellum, and cerebrum, allows us accurately to appreciate the influence of each of these parts.

In the other cases, of which we are now to speak, an extraordinary fact presents itself; it is the existence only of paralysis on the side of the body opposite to the cerebral hemisphere which was the seat of hemorrhage, whilst the extremities opposite to the diseased lobe of the cerebellum remained intact.

Two of these cases were published by Dr. Droullain†. In one of them there were two old apoplectic cysts, the one in the left lobe of the cerebellum, the other in the external and middle part of the right hemisphere of the cerebrum; there had existed a hemiplegia on the left side. In the other case, there was found, in the midst of the left lobe of the cerebellum, a sanguineous effusion the size of a nut, and at the same time there was discovered in the right hemisphere of the cerebrum, between the optic thalamus and the corpus striatum, the traces of an old hemorrhage; the patient had recently had hemiplegia on the left side. After a a fall he exhibited symptoms referrible rather to an acute meningitis than any other affection; alternations of delirium and somnolence; temporary contraction of the extremities of the two sides; convulsive movements of all the body; retroversion of the occiput.

The different facts which we have now recorded, lead us to the same results as those derived from our own experience.

From both we may draw the following corollaries:—

1st, When the effusion which has taken place into one of the hemispheres of the cerebellum is sufficiently extensive, without being too much so, it produces paralysis of one of the sides of the body.

2nd, The side of the body paralysed is that which is opposite to the hemisphere of the cerebellum, where the hemorrhage has taken place. This fact has been ascertained both in the cases of simple hemorrhage of the cerebellum, as also in those where there was at the same time hemorrhage of the cerebrum and cerebellum of the same side, or, in other cases, where the hemorrhage of the cerebellum had preceded that of the cerebrum, both taking place in the opposite hemispheres. M. Piorry's case exemplifies it.

3rd. Hemorrhage of the cerebellum does not produce hemiplegia, at least, that we could discover, in the cases where there was a very severe attack; then there is observed a general resolution of the four extremities, as takes place also in the cases of abundant cerebral hemorrhage.

4th. When the hemorrhage of the cerebellum occurs simultaneously with that of the cerebrum, or a little time after it, but so that the blood is effused on the right into the cerebellum, and on the left into the cerebrum, or *vice versa*, there is paralysis only on the side of the body opposite to the hemisphere of the brain where the hemorrhage has taken place, that is, on the same side as the hemorrhage of the cerebellum. How then does it come to pass that, whereas the movements

---

[*] Lancette Française, No. du 17th Octobre, année, 1829.

[†] Droullain, Dissertation Inaugurale.

of the extremities of the right side are abolished in consequence of an effusion of blood into the left hemisphere of the brain, the effusion which takes place simultaneously into the right hemisphere of the cerebellum, has no longer the power of paralysing the extremities of the left side? It had this, however, in the cases where the brain remained intact: is not that a fact worthy of attention?

5th. It is not satisfactorily proved that the contractions of the limbs, convulsions, retroversion of the head, which have been observed in a case where there was simultaneous hemorrhage into the brain and cerebellum, depend on lesion of the latter. Have not similar phenomena been observed, in fact, in cases of simple hemorrhage of the brain?

6th. Sensibility, placed by some authors in the cerebellum, has not seemed to us to suffer special or particular lesion in the cases of hemorrhage of this organ.

7th. The intelligence presents the same modifications as when the effusion of blood has taken place into the brain properly so called.

8th. In none of the cases analysed by us, all regarding hemorrhage of one of the lateral lobes of the cerebellum, no particular phenomenon presented itself with respect to the genital organs.

9th. The functions of the life of nutrition exhibited no modification different from those presented by them in individuals who have had hemorrhage of the cerebrum.

SECTION II.

OBSERVATIONS ON SOFTENING OF THE CEREBELLUM.

Softening of the cerebellum has been observed much less frequently than that of the cerebrum; up to the present time there have been but thirteen cases published, to our knowledge; eight of these refer to softening of one of the lateral lobes, four to softening of the two lobes together, and one only to softening of the middle lobe. Among these thirteen cases there are but nine in which the cerebellum alone is affected; in the four other cases there is at the same time an affection of the cerebrum twice, of the pons Varolii once, and of the spinal marrow once. We have ourselves met but four cases of softening of the cerebellum; we shall now record them.

Case 1.—*Pain of head in the occipital region of three months date—Hemiplegia of the left side established gradually—Latterly convulsive movements of the paralysed limbs—Blindness—Considerable softening of the right lobe of the cerebellum.*

A seamstress, thirty-one years old, had always enjoyed good health. About six weeks before entering the La Charité, she experienced a fright whilst menstruating: the menses were suppressed, and immediately after their disappearance, she was seized with dizziness, and an acute pain in the back part of the head towards the right side. The dizziness disappeared after bleeding, but the pain of head remained; it was unconnected with any other symptom for eight days; subsequently the patient began to experience an annoying sense of formication at the ends of the fingers of the left hand; she could use this hand but awkwardly, and was astonished at seeing what she handled with it fall continually; soon she became unable to work with it; the entire arm seemed very heavy. After some time the lower extremity of the left side became weaker, and in about a month, the patient had complete hemiplegia of the left side. But at the same time that the patient thus lost the power of motion of one of the sides of the body, her sight, till then very good, became very weak, and five weeks after the appearance of the first symptoms, she became completely blind.

This was the state in which we first saw her—deprived of sight, and of the power of moving the limbs of the left side; then the pain of head became less acute; the patient, however, still felt it, and referred it to the lower part of the occipital region of the right side; the paralysed limbs were flaccid, and allowed themselves to be moved in all directions, the skin covering them still retained its sensibility; no trace of paralysis on the face; the pupils, moderately dilated, still contracted on the sudden approach of light; the appearance of the eyes natural; there was, however, complete blindness; she could scarcely distinguish day from night; intelligence perfect; the pulse natural; the menses had not reappeared since they were suppressed by the fright. Leeches were first applied to the nape of the neck, then to the genital organs; aloetic pills were frequently given, and subsequently the back of the head was covered with a blister.

No change appeared for the three first weeks of her stay in the hospital; then, without any known cause, the pain of head suddenly became more violent, and extended to the entire cranium; the extremities of the left side, which till then had remained entirely immoveable, were several times agitated with convulsive movements, which were slight in the lower extremity, but very violent and almost continual in the upper limb; acute pains accompanied these convulsions; the intelligence soon became disturbed; complete delirium set in; for twenty-four hours the patient spoke, and became agitated incessantly; she then fell into a profound coma, in which she died.

Post mortem. The pia mater extended over the convexity of the cerebral hemispheres was very much injected, as was also that covering the hemispheres of the cerebellum. The substance of the brain, properly so called, was marked with a considerable number of red points, and presented no other lesion; lateral ventricles distended with a great quantity of limpid serum; the fornix and septum lucidum natural. Externally the cerebellum appeared healthy; but we had scarcely removed some layers of the substance of its right hemisphere, proceeding from above downwards, when we found an immense cavity, where this substance, deprived of its normal consistence, was changed into a greyish bouillie; this softening occupied at least two-thirds of the right hemisphere of the cerebellum; it partly attacked the prolongations which go from the cerebellum, either to the spinal marrow, or to the tubercula quadrigemina, or to the annular protuberance; it did not extend as far as the lower surface; in no part of its extent was there either injection or infiltration.

Remarks.—This softening, seated in one of the hemispheres of the cerebellum, and occupying a considerable portion of it, presented in its symptoms and progress the greatest resemblance to softenings of the brain. Here, again, as in the cases of hemorrhage of the cerebellum cited above, the paralysis existed on the side opposite to that on which the softening existed. There was neither in motion nor sensation any special disturbance connected with the functions assigned to the cerebellum by some physiologists. The intelligence, to be sure, retained all its integrity: but was it not also found to be intact in more than one case of softening of the brain? The seat of the pain alone could incline us to suspect that of the disease. With respect to blindness, it seems at first that it has nothing to do with diseases of the cerebellum, and yet this case is not the only one in which different affections of the cerebellum have been accompanied by a loss of vision. May this fact be explained by the anatomical relations established between the cerebellum and the tubercula quadrigemina by means of the prolongations known by the name of *processus a cerebello ad testes?* The symptoms which supervened during the latter period should not, in our opinion, be connected with softening of the cerebellum: they depended on a complication, and we think that we may refer them to the bright red injection presented by the meninges, as well as to the great quantity of serum contained in the ventricles.

We know of but few cases in which a softening of the nervous centres succeeded in so marked a manner to a moral impression; the latter had at the same time the effect of suppressing the menses, and it is a remarkable coincidence that in this particular case where there was disturbance in the performance of a function assigned to the genital organs, the same cause which produced this disturbance exercised its influence also on the cerebellum.

CASE 2.—*Pain of head in the occipital region—Hemiplegia of the right side with contraction—Preservation of the intelligence—Attack of apoplexy of which the patient died—Softening of the central part of the left lobe of the cerebellum—Hemorrhage in the cerebral hemisphere of the left side.*

A labourer, fifty-three years of age, told us when entering the La Pitié, that for the last two months he felt a pain towards the posterior and inferior part of the cranium; it existed both on the right and left sides: he lost by degrees the power of moving the extremities of the right side, and recently the paralysis of these extremities was complicated with considerable contraction. The sensibility was retained in the paralysed limbs; motions of the face not changed; intelligence perfect.

This patient presented no change in his state; only he complained from time to time of feeling dizziness; he was bled for this, and also took some gentle laxatives, and had revulsives applied to the lower extremities. One morning, he told us that from the preceding day, his dizziness of head was much more severe than usual; the face was very much injected; he no longer saw all objects, but through a sort of cloud, and his speech became stammering; he added, that his habitual pain in the back part of the head extended to the entire cranium. Sixteen ounces of blood were taken from him, without any benefit; in the course of the day, the vertigo went on increasing; and towards four o'clock in the evening, he fell deprived of consciousness. On the following morning, he presented all the symptoms of an attack of apoplexy; absolute loss of intelligence; profound coma; general insensibility; respiration stertorous: he died in the evening.

Post mortem. General injection of the meninges; rose-coloured hue of the grey substance of the circumvolutions. An immense effusion of blood occupied the middle part of the left hemisphere of the brain; the corpus striatum and optic thalamus were affected by it, and the blood forced its way into the corresponding lateral ventricle. Septum intact; no appreciable alteration in the right cerebral hemisphere; we were astonished at this; as we here sought for the cause of the old hemiplegia of the left side, and of the other symptoms experienced previously to the recent attack of apoplexy.

This cause, however, existed elsewhere; in the centre of the left hemisphere of the cerebellum we found a yellowish softening about the size of a nut. In some points this softening exhibited a reddish tint; around it the substance of the cerebellum was not more injected than elsewhere. Considerable infarction of the lungs.

Remarks.—This case resembles the preceding in several respects; the commencement was the same, as were also the symptoms. In the two cases, the intelligence was intact; in both the power of motion was lost in the limbs opposite to the hemisphere of the cerebellum where the softening was, and in both the hemiplegia was established gradually; but in the first case there was but mere paralysis; in the second, there was at the same time contraction of the limbs; and observe that, in this second case only, some of the softened points exhibited a red tint. In these two cases, in a word, there existed pain of head at the commencement, the seat of which corresponded to that of the disease. Here, however, there was not blindness as in the first case: did that depend on this circumstance, that here the softening was less extensive, and on this also, that it affected particularly the portion of the lobe of the cerebellum which is specially related to the tubercula quadrigemina?

There is another point of resemblance between these two cases with respect to the manner in which the disease terminated. In both it was of the brain affection the patients died, there having been congestion of this organ in the first, and in the second a hemorrhage which was itself preceded by cerebral hyperemia, which was not subdued by bloodletting. It is remarkable that the apoplectic attack occurred a few hours after the bloodletting.

CASE 3.—*Sudden loss of consciousness, and of motion of the extremities of the left side—Re-establishment of the intelligence—At the end of nine days, a new attack of apoplexy and death—Considerable softening of the right hemisphere of the cerebellum.*

A shopkeeper, twenty-nine years of age, was in the habitual enjoyment of good health. One morning, having breakfasted as usual, and being engaged in his shop, he suddenly uttered a loud cry, put up his hand to his head, and fell to the ground deprived of consciousness. For the first few minutes after this, his four extremities were agitated with convulsive movements; then they disappeared, and the patient remained in a stupor: he was bled. After about three quarters of an hour, the stupor ceased; the patient came to himself; he recovered his consciousness; speaks freely; has no recollection; but the entire left side of the body was deprived of motion. Thirty-six hours after the attack, he was removed to the Maison de Santé, and presented the following state:—

Face pale; complete paralysis of the two extremities of the left side; no contraction of the limbs; diminution of the sensibility in the paralysed limbs; intelligence clear; speech free; no pain of head; pulse free from frequency; respiration natural.

Hemiplegia was then here the only phenomenon; during the seven days following, no new symptom was observed; but at the end of this time, the severe symptoms exhibited by the patient, at the commencement of his affection, reappeared; the same loss of consciousness; the same convulsive movements; these were of short duration; but the stupor which succeeded them was not temporary as the first time; it became, on the contrary, more and more profound; the respiration became embarrassed, and the patient died in coma.

Post mortem. We found in the nervous centres no other change than considerable softening of the right hemisphere of the cerebellum. More than two-thirds of this hemisphere no longer existed except in the form of a bouillie, the colour of which varied according to the points examined. The softened mass presented in no part any effused blood.

Remarks.—This case differs from the two preceding, both in the nature of the symptoms, and in their mode of development. Here, in fact, the paralysis was established suddenly; it attained all at once its highest degree of intensity; the disease commenced by a complete loss of consciousness, accompanied with convulsions. At first it might have been taken for a fit of epilepsy, and what might have strengthened one in this opinion was, that at the end of a very short time, the intelligence returned, without the patient retaining any recollection of what had passed. All that remained of the serious symptoms was the hemiplegia; but we have more than once seen epileptic patients, who, after each fit, also remained paralysed on one side of the body for a certain time. This hemiplegia still continued in all its intensity, when, at the end of eight or nine days, there came on a second attack, which, also, in its symptoms very much resembled those of epilepsy. This second attack was fatal. Nothing certainly in this case could have enabled us to foresee the seat of the morbid change which caused all these symptoms; even the pain in the occipital region was here wanting, which existed in cases 1 & 2.

Case 4.—*Pain in the occipital region—Convulsive agitation of the limbs—Difficulty of respiration—Softening of the left hemisphere of the cerebellum.*

A groom, aged nearly forty years, had always enjoyed good health, when he was seized with violent pain of head accompanied with dizziness: a bleeding, a few days after, diminished, without, however, removing these symptoms, and he remained the fifteen days following with headach, vertigo, and a feeling of debility which prevented him from working as usual; his appetite, also, was somewhat impaired. After this time a more serious state suddenly set in; the pain which till then occupied the entire head, was concentrated towards the occiput, and became at the same time much more acute; he kept to his bed, and after having been bled again, he was conveyed to the Maison de Santé, where he presented the following state:—

He answered questions with some difficulty, as one who scarcely understood what was said to him; in other respects his answers were rational; when asked where he felt pain, he pointed his hand to the occiput, and more particularly towards the left side of this bone; he moved his four extremities with equal facility, and the sensibility in them was not changed. Vision was much weaker on the right than on the left; there was no difference, however, between the two pupils. Pulse not frequent. Thirty leeches were applied to the base of the occipital bone, and a purgative was administered.

The three days following, the patient was in a state of continual agitation; the motion of the limbs, both on the right and left, were at times so sudden and irregular, that they appeared to be convulsive. He constantly complained of his head, and directed his hands incessantly to his forehead. The respiration, which was calm on the first day, became very much impeded; it was performed as it were in jerks, and it would appear that the muscles destined to execute this function participated in the convulsive movements of those of the limbs. He soon died in a state of asphyxia.

Post mortem. Meninges injected; nothing particular in the hemispheres of the cerebrum; a small quantity of serum in their ventricles; reddish softening of the left hemisphere of the cerebellum in its posterior and inferior half.

Remarks.—Here is a case in which the softening of the cerebellum presented itself to us with symptoms very different, in certain respects, from those observed in the three preceding cases. Here there is no paralysis, and the only change noticed in the power of motion, was that singular and irregular agitation of the limbs, both on the right and left side. But here again, we find the occipital pain which also existed in cases 1 and 2, and still further, vision was weakened in the eye opposite to the affected lobe of the cerebellum, an important fact, since we find it in several cases of affection of the cerebellum. Another phenomenon deserving of remark, was the embarrassment of the respiration. There was a direct influence exercised in this function, or, at least, on the muscles which serve to perform it, by the morbid state of the cerebellum.

The four cases now cited, bear a strong resemblance to those which have been already published by different authors, and the differences which they presented to us with respect to the nature of the symptoms are also found in the latter. We shall now present an analysis of thirteen cases, four of them belonging to ourselves; namely,—the four preceding cases; and nine of them having been collected by others *.

In these thirteen cases, the intelligence presented the following state:—Several times, it continued always intact. One time, being at first intact, it became disturbed towards the end, and some delirium came on during the last twenty-four hours; but in this case, which is our first, there was found, on examining the body, considerable injection of the membranes and of the cerebral substance. On two other occasions, the intelligence, without being lost, became dull, as occurred in the subject of our fourth case, and in another quoted by M. Monod. On three other occasions the disease commenced with sudden loss of consciousness. At another time it was some days after the attack of a continued fever that the patient fell into coma.

---

* Parent-Duchatelet et Martinet, Traité sur l' Arachnitis, p. 420. Rostan, Ramollissement du Cerveau, 2nd Edit. p. 143. Lallemand, Maladies l' Encephale, Lettre ii. p. 34.; Lettre v. p. 330. Serres, Anatomie du Cerveau, tom. ii. p. 616 (Deuxieme Observation). Chambeyron, Thèse. Dany, Memoires de Médecine Militaire, tom. xxii. p. 379. Monod. Nouvelle Bibliothéque Médicale, 1828, tom. iii. p. 74.

In two cases the speech was altered; it was not lost, but merely became embarrassed in the subject of M. Monod's case; it was, on the contrary, completely lost in a case cited by M. Lallemand, and in this case, the cerebellum was the only part of the nervous centres appreciably altered.

Whilst the changes of intelligence were variable, inconstant, and of little importance, the lesions of motion, on the contrary, were observed in all the cases except one; and again, in this case it is not quite certain that motion was not interfered with; it is there said that the patient fell into coma; but there does not appear to be anything certain with respect to the state of the limbs, and, besides, this case leaves some doubts regarding the nature of the alteration of the cerebellum.

There remain then twelve cases, out of thirteen, in which the power of motion is evidently changed.

In two cases, the alteration consisted in a sort of convulsive agitation of the limbs, this agitation being equal on both sides; one of these cases forms the subject of our fourth case, the other is detailed by M. Monod.

Finally, in the ten other cases, the existence of paralysis was ascertained, either simple, or with contraction of the parts deprived of voluntary motion.

Out of these ten cases, the lesion of motion was observed nine times in the limbs of the side opposite to the hemisphere of the cerebellum, where the softening took place—once it was found to have taken place on the same side as the softening. This exceptional case was published by M. Rostan. It was that of a woman, sixty-three years of age, who entered the infirmary of the Salpêtrière to be treated for pneumonia, of which she died. This woman had, for a long time back, the right arm contracted, and could not perform any motion with it; the three other extremities had preserved their natural motion. This paralysis was established gradually, and had been preceded by a numbness which occupied successively the hand, fore-arm and arm. The autopsy showed no alteration in the nervous centres but the following:—The lower part of the right side of the cerebellum, near the annular protuberance, presented a depression produced by an exostosis which occupied the corresponding part of the petrous portion of the temporal bone, and of the portion of the occipital which is articulated with it. The substance of the cerebellum in contact with this exostosis was *softened.*

Is it in consequence of its particular seat, that in this case the softening of the cerebellum gave rise to a paralysis on the same side with it, or may it not be asked whether the lesion of the cerebellum was really here the cause of the paralysis, for the vertebral canal was not examined? Now, might it not have happened that another exostosis was developed on a point of the parietes of this canal, and that by compressing the part of the spinal marrow on the right, it really was the cause of the paralysis of the right side?

In all these cases, besides, the paralysis most frequently attacked the two extremities of one side at once. Sometimes it was established suddenly; sometimes, on the contrary, it commenced by a slight weakening of the limbs, which increased progressively.

The paralysis of the extremities was but very rarely accompanied by paralysis of other parts of the body; once only there was observed a paralysis of the face, which took place on the same side as that of the extremities. How shall this fact be explained by our present knowledge of anatomy. This case was published by M. Lallemand *. The subject of it suddenly lost consciousness: on coming to himself, he had hemiplegia of the right side, and the commissure of the lips was drawn to the left. A softening of the white substance of the left lobes of the cerebellum was observed, and no other lesion.

Strabismus was remarked in only one case: it took place on the side opposite to the softening.

The sensibility presented several alterations, but none of them were constant.

At first several patients complained of a pain, the seat of which corresponded exactly with that of the lesion; this pain had its seat at the occiput, but it was entirely wanting in more than one case.

The cutaneous sensibility presented the same inconstancy of alteration as in the case of softening of the cerebral hemispheres; sometimes it was abolished, and sometimes more acute than usual; sometimes it continued in its normal state. In the case in which coma existed, the entire skin was insensible; except those cases, the loss of sensibility existed only in the paralysed limbs.

Once only that same insensibility of the conjunctiva was observed which is found to exist in cases where the fifth pair of nerves is affected; at the same time, says M. Lallemand, to whom we are indebted for the knowledge of this fact, the eye was as it were withered †. What connexion, then, unites certain fibres of the cerebellum to the fifth pair?

Digestion, circulation, and the different secretions presented nothing remarkable. In some cases the respiration was very much modified, as may be seen in our fourth case.

With respect to the genital organs, there is reference made only to one of the thirteen which form the subject of our analysis. This case was published by M. Dany: the patient, says this physician, *continually applied his hand to the testicles, though these organs presented no trace of suffering.*

In all that has been said, there is as yet mention only of the cases in which one of the lateral lobes of the cerebellum was alone softened. Let us now consider the cases in which the softening affected the entire cerebellum. Only three cases of this kind have been published to our knowledge.

In one of those three cases ‡, the individual, who was a child of fourteen months old, was attacked with epileptic fits, in which he died. During his illness it was noticed that the penis was in a state of half-erection. The cerebellum was softened and diffluent at its base on both sides. But the same softening affected the upper portion of the spinal marrow.

In the second case § an erotic delirium was observed with the phenomenon of erection. The author of this case states, without more detail, that the grey substance of the cerebellum was everywhere softened. Was it only the external grey substance?

In the third case || phenomena of an entirely different nature took place. The patient evinced an extraordinary tendency to fall back; when he sat down, he could not rise without much difficulty; one time when in the erect posture, the first movement of his feet was in a lateral direction, without his leaving the place where he was. In order to change place, he directed his feet from before backwards: he assured us that an irresistible force obliged him to go backwards. In this case the lesion of the cerebellum was much more considerable than in the two preceding cases; it was, *in its entire extent*, changed into a whitish bouillie, where there was no longer discovered any trace of organisation. Thus the functional disturbances occasioned by softening of the cerebellum vary according to the greater or less extent of this softening, and to the parts affected.

---

* Loc. Cit., Lettre ii. p. 134.

† Lallemand, Lettre ii. p. 134.

‡ Revue Médicale, tom. i. p. 338.

§ Archives Générales de Médecine, tom. xxii. p. 133.

|| Journal de Physiologie Expérimentale, &c., tom. vi.

SECTION III.

ACCIDENTAL PRODUCTS DEVELOPED IN THE CEREBELLUM.

CASE 1.—*Cyst filled with pus in the centre of the left hemisphere of the cerebellum—Pain at the base of the occiput—Paralysis, with contraction of the extremities of the right side—Convulsions at intervals—Intelligence free.*

A girl, nineteen years of age, was paralysed in the entire of the right side of the body, when she was admitted into the Hôpital Cochin. The upper extremity struck with paralysis, was at the same time very much contracted, and she experienced acute pains in the part from time to time. She also felt, towards the upper part of the nape of the neck, acute lancinating pains, which returned occasionally. In the interval between them, she felt towards the same part a dull pain, which seemed to her to lessen when she inclined the head forwards, and a little to the left; she usually kept in this position. She told us that she first began to feel pain in the back part of the head, and that some little time after the extremities of the right side lost the power of motion. All this time amounted to about five weeks. The intelligence was clear.

A little time after her admission, the pains of the occiput and back part of the neck became more and more acute, and convulsive movements were soon added; these always commenced by a violent shaking of the head, which was inclined backwards, as in a variety of tetanus. On some days the convulsions were confined to this part; at other times they became general, and almost all the muscles of the body became affected. Consciousness was still preserved.

However, the convulsions went on increasing both in frequency and intensity; they extended to the respiratory muscles, and she died in a state of asphyxia. She vomited frequently towards the close.

Post mortem. The left hemisphere of the cerebellum was occupied some lines beneath its upper surface by a cyst as large as a pullet's egg, filled with greenish pus; the parietes of this cyst, formed of a sort of cellulo-fibrous tissue, were about a line in thickness. Around it the nervous tissue was healthy.

Remarks.—This case of encysted abscess of the cerebellum resembles very much, with respect to the symptoms, some cases of softening of the cerebellum detailed above. We find here both the occipital pain and the paralysis, the seat of which is always opposite to that of the lesion. Here also, as in several of these cases of softening, the intelligence remained intact. But there is in this case a prevailing phenomenon: that is, the convulsions, the constantly increasing intensity of which always ends fatally. The vomiting observed towards the close was not connected with any morbid change of the stomach; like the convulsions, in the nature of which they participated, they were the result of the disturbance of the innervation.

This abscess formed slowly, and did not succeed to any acute disease, nor was it caused by external violence.

Let us now try to connect with this case some other cases of abscess of the cerebellum, published by different writers.

The cases of this kind which we have been able to collect amount to eleven. In eight of them the abscess occupied one of the lateral lobes of the cerebellum; in two others the suppuration occupied the two lobes; and in one case only it was the middle lobe that was affected.

The analysis of these eleven cases and of our own gives the following results:—The intelligence was not disturbed in any case, except sometimes at the end: in several cases it is said the patients die possessed of all their consciousness. In the individual who forms the subject of one of Dr. Abercrombie's cases, continual drowsiness was observed; but the patient could be easily aroused from it, and then he enjoyed all his intelligence.

The power of motion remained intact in six cases. In five of them one of the lateral lobes of the cerebellum was the seat of the abscess; in the sixth it was the middle lobe.

Paralysis took place in three cases, but with particular circumstances in each of them.

Thus, in the case above recorded, there was hemiplegia with contraction on the side opposite to the diseased lobe of the cerebellum.

In another case, quoted by Borsieri from Plancus, there was also hemiplegia, but on the same side as the abscess of the cerebellum[*]. This case would form the second exception which we meet to the law of the crossing influence of the hemispheres of the cerebellum: the first exception was furnished by M. Rostan.

In a third case, cited by M. Larrey, the paralysis at first affected the two lower extremities; and subsequently it became general. In this case the suppuration attacked the two lobes of the cerebellum at once.

A remarkable alteration of motion was noticed in M. Lallemand's case. The patient staggered on his legs. In this case, the only one which tends to confirm the opinion of the physiologists, who assign to the cerebellum the province of regulating motion, the cerebellum was converted into a pouch full of pus.

To complete the table of the different disturbances of motion which took place in the twelve cases of abscess of the cerebellum now analysed, in the case of Plancus already cited, there was a well-marked trismus, and in one of Abercrombie's cases, where the abscess occupied but one of the lobes of the cerebellum, strabismus was observed.

Such are the different disturbances affecting motion in these twelve cases: let us now see what were the disturbances of sensation.

In only one case (and that was seen by ourselves) the limbs, but only those which were paralysed, were the seat of acute pains. In no other case was the sensibility affected.

In nine cases there was pain of head; and in all it was remarkably severe; sometimes it was continued, sometimes intermittent. Four times the seat of this pain was not determined; three times it occupied the occipital region; twice the frontal and occipital regions, alternately in one case, simultaneously in the other; once it was confined to the anterior part of the head.

In only one case was there blindness; it was in the person seen by Gall, in whom the two lobes of the cerebellum were in a state of suppuration. But observe that Gall adds, that the commissure of the two lobes of the cerebellum (pons Varolii) was very much atrophied, and of a yellowish colour. Now did not the morbid state of this part involve the fifth pair of nerves?

In nearly half the cases, there was observed either nausea or vomiting. These phenomena were not a mere complication; they were certainly connected with the affection of the cerebellum.

The generative functions presented nothing particular, except in one case. It was that recorded by Gall, in which the suppuration attacked the two lobes of the cerebellum. The subject of this case was a boy thirteen years old, who gave himself up furiously to onanism.

Among these twelve cases, there are some in which the affection presented the commencement and progress of acute inflammations ; in others, on the contrary, the suppuration took place imperceptibly without the symptoms of an acute affection having been observed at any period. In cases of this latter kind, the duration of the disease was sometimes very long.

---

[*] Dextrum cerebelli lobum abscessu magnam partem corruptum vidit Cel. Lanus Plancus Ariminensis in nobili puero, qui a suppresso puris ex aure ejusdem lateris fluxu, cui a primis usque annis obnoxius fuit, inciderat in acerrimam cephalalgiam cum febre continuâ acutâ, ex quâ intra breve temporis spatium mortem oppetiit. Febris pluries intra diem exacerbatur, et horrifica erat, sic ut hemitritæo similis videretur. Accedebat subinde aphonia et trismus, sed brevi adibat loquendi potestas. Tandem *paralysi non oppositi, ut moris est, sed ejusdem lateris correptus, sensibusque orbatus, fato cessit.*

Case 2.—*Tuberculous mass in the left lobe of the cerebellum—pain of head—Hemiplegia on the left side—Blindness—Intelligence retained.*

A laceman, aged twenty-nine years, presented the following state :—such a weakness of sight that he could scarcely distinguish day from night, and still considerable contraction of the two pupils ; natural sensibility of the face still preserved ; pain all over the head, but more acute towards the occipital region ; hemiplegia of the left side complete, without contraction, or modification of the sensibility of the paralysed limbs. Nothing remarkable in the movements of the tongue ; intelligence perfect ; frequent cough ; some dyspnœa ; pale and emaciated ; subject to diarrhœa. He entered the La Charité, where for the first fifteen days he complained of nothing additional, except that during this time he had diarrhœa, for which leeches were applied to the anus. He told us that, for about the last three years, he had a very painful headach, intermittent at first, and which subsequently became continued ; he also states that, during this time, he gradually lost the power of seeing, and that of motion in the extremities of the left side ; still further, about two years ago, he continued struck for the space of three months with complete insensibility of all the left side of the face ; then he no longer had any taste for food, and the mucous membrane lining the interior of the left cheek seemed to be separated, as if by a piece of linen, from the objects brought in contact with it. He always continued to hear equally well with both ears.

After a fortnight's stay in the hospital, he was carried off in less than three days by an acute peritonitis.

Post mortem. Cranium.—Nothing remarkable in the cerebrum. But on viewing the cerebellum externally, its right lobe was observed no longer to have its usual form ; it was marked with eminences (bosselé), and its laminæ no longer have their ordinary direction, nor their natural relations ; several were effaced. We scarcely penetrated some lines in depth, when in the inner half of this lobe, and in all its height, we find, instead of the tissue which should form it, a hard substance of a yellowish white colour, possessing all the characters of tubercular matter ; there was no softening in any part.

Thorax.—Some miliary tubercles were scattered through the two lungs.

Abdomen.—The peritoneum was filled with a purulent liquid. A great number of small white bodies raised the mucous membrane of the ilium, and resembled so many tubercles. Small ulcerations were found towards the end of this intestine, one of which established a communication between the interior of the intestinal canal and the peritoneum ; whence the peritonitis. The spleen also contained some tubercles.

Remarks.—A pain, the principal seat of which was conformable to that of the lesion, paralysis which took place on the side of the body opposite to the latter, and the loss of sight, such were the symptoms here accompanying the development of the tubercular matter in one of the lateral lobes of the cerebellum. They are the same symptoms as those occasioned by the different affections of the cerebellum already described, only here they are developed very slowly, and continue much longer. In the midst of all this disturbance, the intelligence remained intact. With respect to the extraordinary loss of sensibility, observed for the space of three months in the left side of the face, and which was accompanied by the complete abolition of the sense of taste, could this have been occasioned by a temporary affection of the fifth pair of nerves ?

There were tubercles in several other organs also, as well as in the cerebellum. Those contained by the lung confirm the law laid down by M. Louis.

Case 3.—*Several tubercles in the right lobe of the cerebellum—Occipital headach—Vomiting—Pulmonary phthisis.*

A man, twenty-three years of age, entered the La Charité, with the ordinary symptoms of pulmonary phthisis already far advanced. This man was also tormented for more than a year by a fixed pain seated in the occiput, more particularly towards the right side of this bone. This pain, which was usually dull, became occasionally very acute. Besides, the patient for some months back was annoyed with vomiting, which was frequently repeated; this vomiting always came on whenever the headach became more intense; it returned even without such an occurrence; tolerable appetite; no pain in the epigastrium; appearance of the tongue natural; diarrhœa; he died of phthisis, without presenting any new symptoms referrible to the nervous centres.

Post mortem. Five tubercles in the right lobe of the cerebellum, three of which were of the size of a common pea, another that of a hazel-nut, and another that of a chestnut at least. None of them were softened; between them the tissue of the cerebellum was healthy; two of these tubercles were situated near the upper surface of the organ, and the others were developed in the very centre of the lobe of the cerebellum.

Thorax.—Cavities and numerous tubercles in the two lungs.

Abdomen.—Stomach healthy; ulcerations in the intestines.

Remarks.—Very different from the preceding, this case presents to us an instance of tubercles of the cerebellum announced by very few symptoms. The pain of head is the only phenomenon, the old and constant existence of which announced a lesion of the encephalon; motion remained perfectly intact. The vomiting we think connected with the disease of the cerebellum. On the one hand, no lesion of the stomach accounted for it, and on the other hand, we have seen this same symptom supervene in several other cases of disease of the encephalon in general, and of the cerebellum in particular. We have even seen cases in which, either for the entire duration of the disease, or in some of its periods, vomiting was the only phenomenon which we could connect with the cerebral affection, so that the latter leaving intact the different functions of the life of relation, confined itself exclusively to the stomach, whose action it disturbed. Dr. Abercrombie was so struck by the frequency of such an occurrence, that in his treatise on diseases of the brain, he has ranged under a particular head a certain number of cerebral affections of a very different nature, but which all resemble each other in this, that the prevailing symptoms to which they give rise are referrible to the digestive organs.

There are cases also where these symptoms are quite concealed, where the headach itself does not show itself, and in which there are discovered in the cerebellum tubercles more or less numerous, without there having existed during life any disturbance on the part of the nervous centres; similar cases are not rare, particularly in children. We have met a case of a boy ten years old, who died of phthisis, and who never complained at all of the head, yet the left lobe of the cerebellum contained four tubercles.

These cases remind us of another which was very remarkable, and in which no symptom was observed on the part of the nervous centres, though an important part of these centres was the seat of a well-marked cancerous degenerescence.

The individual who formed the subject of it was a woman, forty years of age, who died of cancer of the uterus, without having ever presented any symptoms but such as usually attend this affection; the cancer was confined to the neck of the uterus. The portion of the medulla oblongata forming the anterior wall of the fourth ventricle, and which constitutes the posterior part of the great commissure of the cerebellum, immediately behind the tubercula quadrigemina, and as far as the anterior extremity of the corpora restiformia, was changed into a tissue similar to that occupying the neck of the uterus.

Case 4.—*Extraordinary sensibility of the skin of the trunk and extremities—Paralysis of one of the sides of the face—Two tubercular masses, one of which was seated in the left lobe of the cerebellum and the other in the vertebral canal—Pulmonary phthisis.*

A boy, seventeen years of age, presented all the signs of pulmonary phthisis, when he was received into the La Charité. He also exhibited some symptoms which indicated a serious lesion of the nervous system. His state was as follows :—

Habitual retroversion of the head; it could, however, be easily brought forward, but if left to itself, it soon resumed its former position. The extremities retained all the freedom of their motions; the senses were intact; but the moment any point of the skin was touched, whether of the limbs or trunk, he experienced a very painful sensation; all the motions of the arms and legs were accompanied with a sort of pain, which the patient compared to that which is felt when one is fatigued. All the left side of the face was struck with the most complete immobility; neither the cheek, eyebrow, nor skin of the forehead on this side could be at all moved, and the right commissure of the lips was drawn up very much. The left eye always open, could not be shut at the will of the patient; the consequence of this was redness of the conjunctiva of this side; these different symptoms existed for several months in all the paralysed side; the sensibility was retained.

This patient died in the course of pulmonary phthisis, without having presented any new phenomenon on the part of the nervous system.

Post mortem. Cranium.—The sub-arachnoid cellular tissue was infiltrated with a certain quantity of limpid serum; this same serum filled the ventricles; the left lobe of the cerebellum was occupied, not far from its outer edge, and at nearly an equal distance from its upper and lower surfaces, by a tubercle about as large as a nut—this tubercle was not softened. On the level of the first and second cervical vertebræ, the spinal marrow was separated from the vertebræ by a tubercular mass developed in the meninges, not large enough, however, to make any considerable pressure on the spinal marrow.

The lungs contained numerous tubercles in all stages. The intestines were ulcerated.

Remarks.—Here again was a case in which the small tubercle, developed in the cerebellum, remained completely latent. There were, in fact, but two symptoms which indicated the affection of the nervous system: the first was the facial paralysis, and the second the cutaneous hyperæsthesia *, accompanied with pain in muscular contraction. Now, the paralysis of the left side of the face does not seem to us to have been caused by the alteration of the cerebellum, but, perhaps, by an affection of the portio dura of the seventh pair of nerves. Perhaps there was also a tubercle, which, developed in the bony canal where this nerve is inclosed, had made pressure on it.

With respect to the great increase of sensibility exhibited by the skin of the trunk and limbs, with the production of pain whilst the muscles of these limbs were contracting, it seems to us a matter of doubt whether this phenomenon depended on the lesion of the cerebellum. We are well aware that some cases have been cited in which the changes of this organ have been followed by similar phenomena. Here, besides, there was another lesion, which, in our opinion, was more probably the cause of the extraordinary exaltation of the sensibility: that was the tubercular mass developed between the upper extremity of the spinal marrow, and the posterior wall of the bony canal inclosing it; it was then the posterior surface of the spinal marrow, which was in contact with this morbid product, that is, the part of this organ, which the experiments of M. Magendie warrant us in regarding as the special agent of sensibility. But if the tubercular mass had increased, a time would have arrived when it would have compressed the spinal marrow, instead of irritating it by its mere contact; and then the sensibility, at first exalted, would have been destroyed.

---

* Hyperæsthesia, excessive sensibility, from ὑπερ, and αἰσθανομαι, to feel or perceive.—Tr.

Case 5.—*A cyst filled with ossiform concretions in the right lobe of the cerebellum.*

A female child, twenty months old, exhibited no other symptom during her stay in the Hôpital des Enfans, than a constant moving of the head, by which this part was continually balancing from right to left and from left to right. In other respects the child seemed to evince as much intelligence as other children of the same age; her sight was good, and the motions of the limbs free; countenance pale. She died of severe diarrhœa.

Post mortem. The centre of the right lobe of the cerebellum was occupied by a cyst the size of a nut, which contained a great number of small concretions of irregular forms, and hard as bone: they were immersed in a gelatinous kind of liquid: around them the nervous substance underwent slight softening.

Several of the circumvolutions of the convexity of the cerebral hemispheres were considerably hardened.

Remarks.—A considerable number of cases have been recorded relative to tumours of different kinds developed in the cerebellum and around it, and which, in either situation, must exercise an influence on the functions of this organ, whether it be irritated, compressed, or disorganised by them.

We have found scattered, in different works, thirty-one cases of this kind. In all these cases, the tumours formed in the cerebellum or in its membranes, were sometimes cysts containing solid or liquid substances of different kinds, sometimes fibrous masses, sometimes tubercular or cancerous products.

In the great majority of these cases, the intelligence was preserved intact during the entire course of the disease; only that frequently a few days before death a state of coma was observed, which sometimes might be accounted for by considerable injection of the entire encephalic mass, or by the presence of a great quantity of serum in the ventricles; sometimes no lesion was found which could account for it; in the latter case it is probable that a moment arrives, when, either by its greater development, or by the sole fact of its prolonged existence, the affection of the cerebellum will produce a reflected effect on the rest of the encephalon, and seriously disturbs its functions; for there is certainly a consent of action between all the parts of the encephalon, and one of them cannot be for any time altered without the others ultimately feeling it.

Seven patients only, out of thirty-six, presented, long before death, a marked disturbance of the intelligence.

One of these patients, a female, thirty-five years of age, was an idiot from birth. The right lobe of the cerebellum was compressed by a tumour which had its origin in the occipital fossa. It might be supposed that the idiotcy was caused by the embarrassment of the cerebral circulation; but, is it probable that this tumour existed from birth? Now, the absence of intelligence was dated from this period. It is not, then, probable that, in this case, the lesions found in the cranium were the cause of the idiotcy.

Another patient exhibited a loss, at first temporary, but afterwards permanent, of the memory of words. There was found in this individual an encephaloid tumour in the centre of the right lobe of the cerebellum, nearer the lower than the upper surface. A great quantity of serum also distended the lateral ventricles.

In three other patients, a general weakness of intellect was noticed. In one of them the right lobe of the cerebellum was compressed by a tumour which belonged to the dura mater; some serum dilated the ventricles. In the second an encephaloid mass seized on the posterior and inferior part of the cerebellum, as well as the medulla oblongata. In the third, a tubercle of an inch and a half in diameter was developed on the upper surface of the cerebellum, in the median line.

In a seventh patient, some delirium was observed. Did this delirium, which was of short duration, depend on the tubercles found in the left lobe of the cerebellum? Was it not rather the result of the injection which was detected in the pia mater of the base of the brain? Such are the only cases in which the intelligence presented any perceptible disturbance. The disturbances of motion are much more frequent.

Out of our thirty-six cases, there are but eight in which motion was not in some way disturbed.

Complete or incomplete paralysis was observed fifteen times.

In this number there were but four who had hemiplegia; it took place on the side opposite to the lesion of the cerebellum in three cases, and in a fourth the two lobes were diseased.

Paralysis was also observed four times. In these four cases the cerebellum was compressed or disorganised, either in its two lateral lobes at once, or in its middle lobe. In one of these cases the medulla oblongata participated in the alteration of the cerebellum. It is remarkable that in these four cases the paralysis particularly affected the lower extremities, whilst the upper extremities enjoyed all their freedom of motion, or else had undergone only a debility always less than the lower extremities.

Two patients presented a paralysis, or at least a considerable debility of the four extremities. In one of them, a tubercular mass, developed at the base of the cranium, compressed at once the cerebellum and spinal marrow; in others the two lateral lobes of the cerebellum contained tubercles, but they were twice as large in the right lobe as in the left; and the feebleness of the limbs was greater on the left than on the right; so that this case of general paralysis may again serve to prove the crossing influence of the lobes of the cerebellum.

The paralysis of the face, which we met once in one of the cases belonging to ourselves, isolated from every other paralysis, was connected with the existence of two tuberculous masses; the one developed on the left lobe of the cerebellum, and the other at the posterior surface of the spinal marrow.

There remain four patients, of whom nothing else is said with respect to motion except that *they gradually become debilitated.*

Involuntary contractions affecting a greater or less number of muscles were observed more frequently than paralysis; we met twenty-two cases in which these contractions were found to exist. In fifteen of these twenty-two cases, the entire body was agitated at intervals by convulsive movements, which became more and more frequent, and it was often in the midst of violent convulsions that the individuals died. Some, and that was the greatest number, retained their consciousness during the continuance of their convulsions; others lost it suddenly, and they presented the symptoms which characterise an attack of epilepsy. In these patients, the lesion occupied different seats sometimes confined to a single lobe of the cerebellum, sometimes extending to the two, sometimes occupying also the medulla oblongata.

The movements of the tongue were embarrassed in only two cases, and in both it results from the seat of the lesion, that the nerve of the ninth pair must be compressed or disorganised by the tumor pressing on the cerebellum.

In the thirty-six cases which form the subject of our analysis, the sensibility presented disturbances not less varied than the power of motion.

The general sensibility presented no disturbance in the greater number of the cases: sometimes, however, it exhibited a remarkable exaltation, whilst, at other times it was completely abolished.

Not merely the general sensibility has been modified in some of our thirty-six patients; occasionally, also, the organs of the particular senses have been found affected; thus, in one case, deafness was observed; and in six, vision was either completely destroyed, or very much weakened.

Among the organs of the life of nutrition, the stomach is the only one which presented a phenomenon deserving of particular notice, with respect to its frequent reproduction; this phenomenon is vomiting; it was observed twelve times in thirty-six cases.

If you now consider these twelve cases with respect to the nature and seat of the affection of the cerebellum, you will find nothing different from what was to be seen in the twenty-four other cases, where there was neither vomiting nor nausea. A priori we should not expect to find this peculiarity of either seat or lesion; for in all this volume, in connexion with lesions the most different, as well those of the meninges as those of the nervous pulp itself, we have seen vomiting show itself as a common effect of a crowd of affections of the encephalon. Can it be said that when it is produced, the brain is in the same condition as when it does not occur? Certainly not, for a different effect cannot be comprehended, but with respect to a different cause; but these conditions we know not; they escape us just as those interior changes of organisation have been removed hitherto from our researches, which changes, coming to be connected with identical lesions, render their effects so variable. Certainly, the inconstancy of the effects here can only be owing to the variety of causes. To ascertain those causes, it would be necessary to interrogate each cerebral fibre, first considered separately, and then traced in its connexions with other fibres. It is in this double point of view, that we think the pathology, as well as the physiology of the brain, should be studied. It is, on the one hand, a great whole, composed of a number of parts, each of which performs a special act; but, on the other hand, these different parts are intimately connected with each other, so that they are mutually bound together. Hence it follows, that in the point where a lesion is discovered, the direct cause of the effects which it produces does not always reside, and according as it re-acts on such or such other points especially destined for the performance of a certain act, it is this which will be found modified. If then it happened that we succeeded in discovering in the encephalon a certain number of parts, the lesions of which always occasioned the disturbance of the same cerebral act, it would not, in our opinion, be fair to object to the doctrine of localisation, that there are also other cases where this same functional disturbance is reproduced, though the lesion might be elsewhere.

Among the thirty-six cases constituting the subject of our analysis, only in three was any thing particular noticed with respect to the genital apparatus. In one of these cases permanent erection of the penis was observed during the whole time the patient was attended. There was, in this case, compression made at one and the same time, by a tuberculous mass, both on the right lobe of the cerebellum, and on the medulla oblongata. In the second case, the patient indulged in masturbation; several tubercles were found in the upper part of the cerebellum; whether on both sides, or on one only, we are not told. Lastly, in the third case, regarding an individual said to be very prone to venereal desires, a tubercular mass occupied all the substance of the middle lobe.

DIVISION II.

DISEASES OF THE CHEST.

FIRST BOOK.

DISEASES OF THE HEART.

1. SINCE the publication of the immortal researches of Corvisart, and of the numerous works which have, since his time, extended the domain of science, the history of diseases of the heart and its appendages should be considered as almost completed. In the following observations we shall call attention particularly to certain points of this history, which, after so many researches, still appeared capable of being illustrated by additional facts.

SECTION I.

OBSERVATIONS ON DISEASES OF THE PERICARDIUM.

2. Most of the morbid phenomena to which acute or chronic inflammation of the pericardium gives rise, seem to depend on the sympathic disturbance, which is felt either by the heart or by other organs. These phenomena must then be extremely variable with respect to their nature and their intensity; they must present as many differences as there are in the sensibility of each individual, in the number and activity of the sympathies of his organs. It is the same in this respect with diseases of the membrane covering the heart as with the membranes covering the cerebro-spinal system. It would, to be sure, be a desirable thing that such a lesion was always indicated by such a determinate group of symptoms; but such a thing occurs in only a very small number of cases: thus to endeavour to connect with any lesion symptoms always identical, is to retard the improvement of diagnosis in wishing to simplify it. It would be a task at least as useful to endeavour thoroughly to know the symptoms, as numerous as they are varied, which may depend on one and the same lesion. It is not certainly with practical

medicine as with several other branches of human knowledge, where a small number of principles being given, nothing remains but to apply them to all the particular cases. In medicine, on the contrary, where a fact is never precisely similar to the facts already observed, it is necessary continually *to individualise,* if I may say so ; in that consists the entire art of diagnosis, and thence it is that the well-instructed physician who has seen most, must also see best.

CHAPTER I.

ACUTE PERICARDITIS.

3. The following cases are of three kinds : the first will point out inflammation of the pericardium announced by local symptoms, which render its diagnosis sufficiently easy. We shall then give other cases, in which there was no other local symptom than greater or less dyspnœa ; so that it was only by a process of exclusion* that the existence of pericarditis could be recognised. Finally, in a third class, will be found cases of a rarer description, in which the acute pericarditis was not even announced by dyspnœa, and in which it produced no other symptom than great acceleration of the pulse, nervous phenomena of a severe kind, sudden prostration of strength, and death.

ARTICLE I.

CASES OF ACUTE PERICARDITIS WITH CHARACTERISTIC SYMPTOMS.

CASE 1.—*Acute articular rheumatism—Suddenly a sharp pain in the region of the heart—Speedy death—Purulent exudation on the internal surface of the pericardium.*

A baker, thirty-one years of age, entered the La Charité in the course of the month of August, 1822. For the last fifteen days he had been affected with acute pains, which ran through different articulations, and which at the time of his admission were seated in the articulations of the elbow and wrist of the left side, the right knee and foot of the same side. All these parts were swollen and red. Several times since the attack of this rheumatism he had severe headachs ; the fever was intense ; the tongue was red and a little dry ; the epigastrium sensible to pressure. Two bleedings of twelve ounces each were resorted to the first twenty-four hours. The coagulum of blood was covered with a thick buffy coat. The next day there was no perceptible amendment ; a third bleeding was ordered, which was buffed as the preceding ; the knee and foot of the right side ceased to be painful, but at the same time the left knee swelled ; the elbow and wrist of the left side were less swollen, and were free from pain in the state of rest, but the least motion excited acute pains in them. (Bled a fourth time to twelve ounces ; cataplasms, &c. ; blood buffed.) On the fourth day after his admission, and notwithstanding his having been bled four times in three days, the elbow, wrist, and knee of the left side were swollen and very painful ; the tongue lost its redness ;

---

* i. e. Negatively, or by remotion.—TR.

twenty leeches were applied around the knee. On the fifth day there was but very little pain in the latter, but the right knee then became affected ; state of the elbow and wrist of the left side the same ; fever still continued. (Emollients ; cataplasms.) On the sixth day the same state. (Another bleeding to twelve ounces ; ten leeches around the right knee ; ten more to the left wrist.) In the course of the day a visible amendment took place : the different articulations are less swollen, and admit of being moved without much pain ; the patient himself states that for the first time he finds himself considerably better. But this was not to last long : towards eight o'clock at night all his joints were almost free from pain ; but at ten o'clock he was seized all at once with a violent pain a little above and within the left breast ; this pain continued all the night, and the next morning we found him in the following state :—Loud screams in consequence of the very acute pain in the part just mentioned ; this pain was not increased either by pressure, by cough, nor by the inspiratory movements, nor even by change of position ; consequently it does not possess the characters either of a pleuritic or of a muscular pain ; the joints are completely free from pain. Besides, there is no cough whatever ; chest sonorous ; respiratory murmur clear, but very strong ; beatings of the heart very frequent, tumultuous, irregular in strength, and intermittent ; the pulse also intermittent, but very small, and compressible. Features pale, sharpened, expressive of the most intense anxiety ; extremities cold. This alarming aggregate of symptoms was referred to inflammation of the pericardium. The patient seemed so weak, that M. Lerminier did not think it expedient to bleed him again. (Thirty leeches were applied to the precordial region ; sinapisms to the extremities, with the view of bringing back the rheumatic affection, which by a species of metastasis seemed to have seized on the pericardium.) No amendment took place in the course of the day ; the respiration, which was tolerably free in the morning, became more and more embarrassed, and he died the following night, twenty-nine hours after the commencement of the precordial pain.

The examination of the body confirmed the correctness of the diagnosis. The entire internal surface of the pericardium was lined by an exudation which was whitish, soft, membraniform, and presenting an areolated appearance. Beneath this exudation was observed intense redness of the pericardium. There was no fluid effused into its interior ; there was about an ounce of greenish serum obtained from it[*]. The substance and the different parts of the heart healthy. The pleura merely presented some old cellular adhesions, and the lung a sero-sanguinolent engorgement. The stomach was a little red along its great curvature.

Remarks.—We have here one of the most acute cases of pericarditis on record : it lasted but twenty-seven hours, and its commencement followed close on the disappearance of the articular rheumatism. We shall presently see inflammations of the pleura and lung also manifest themselves on the sudden disappearance of rheumatic pains of the joints. This is what the ancients called rheumatic metastasis[†]. These facts merit all the attention of the practitioner. We may observe also, how ineffectual the several bleedings in this case were, either to remove the articular rheumatism, or to prevent the pericarditis*. Here the sympathetic irritation of the central organ of the circulation was the cause of all the symptoms and of death. The pericarditis was recognised by the nature of the local symptoms—to wit, the pain in the precordial region, the tumultuous and irregular beatings of the heart, the great frequency, the irregularity, and extreme smallness of the pulse. This particular state of the heart and pulse has been set down by authors as characterising pericarditis. However, the following case will show us an affection of the pericardium nearly identical, with a very different state of the beatings of the heart, and especially of the pulse.

---

[*] The dulness of sound, which has been given as one of the characteristic signs of pericarditis, could not then exist in this case.

[†] This metastasis is not always followed by a pericarditis, pleuritis, or pneumonia. What may be remarked in more than one case of this kind, is the lesion of function, which is more intense than the lesion of texture seems to be. Thus, after the disappearance of a rheumatic pain, we observe palpitations, an acute pain in the precordial region, a pleuritic stitch, greater or less dyspnœa. But the readiness with which these different symptoms disappear will not allow us to attribute them to a serious alteration in the texture of the organ which is the seat of them. Still these symptoms present features at least as alarming as those which would result from hepatisation of the lungs, or from purulent effusion into the pleura or pericardium. The same cause which on one and the same day will produce pain in ten different joints, which will be seen to return to the healthy state as rapidly as they became affected, this same

Case 2.—*Pain at the lower part of the sternum, and in the region of the heart, becoming intense by degrees, succeeding articular pains—Pulsations of the heart obscure; pulse strong and regular—False membranes in the pericardium.*

A negro, nineteen years old, a tailor, of rather a weak constitution, but in the habitual enjoyment of good health, felt, since the 19th of April, pains which moved alternately from one joint to another, but which were principally seated in the wrist of the right hand, the two knees, and the tibio-tarsal articulation of the left side. Having entered the La Charité on the evening of the 23rd April, 1822, he was, on the 24th, in the following state :—

Intense anxiety; eyes heavy; the right wrist and knee of the same side slightly swollen ; the slightest motion of these parts caused the most excruciating pain ; the left knee and the parts around the ankles were also painful, but not swollen ; pulse frequent and full ; skin hot, and a little moist ; tongue white ; thirst moderate ; constipation. (Venesection to the amount of four palettes, &c.) A copious sweat took place in the evening.

On the 25th, the patient was nearly in the same state. The blood drawn on the preceding day presented a broad coagulum, of but little consistence, and not buffed. The continuance of the pains, and the intensity of the general reaction, induced M. Lerminier to prescribe a second bleeding to the amount of three palettes. A little time after it was drawn, the blood presented a dense small coagulum with elevated edges, covered with a thick buff, and surrounded by a copious greenish serum. Thus there was a perceptible difference between the blood drawn the first and second time, though in both cases the vein had been opened in the same way.

The patient took, in the evening, twelve grains of Dover's powder in two doses. He perspired very much a great part of the night.

The next day the joints were no longer swollen, they were scarcely painful ; but the patient complained, for the first time, of wandering pains in the thoracic parietes ; the respiration was hurried ; the fever still continued. He was bled a third time ; the blood presented the same characters as that drawn the second time.

All the day the patient complained very much ; the thoracic pains were now concentrated in the epigastrium and lower part of the sternum. In the night great restlessness, total want of sleep ; no perspiration.

On the 27th, all the symptoms were exasperated. The inspiratory movements, short and frequent, were performed at once by the elevation of the ribs and the depression of the diaphragm. The patient uttered constant complaints ; he said

---

cause, I say, may then, when it directs its influence towards some internal part, produce there either a simple modification of action, or a lesion of structure. This second lesion is but consecutive to the first, and rarer than it.

* We shall find in this work frequent instances of inflammations, which being attacked from their commencement, or during their course, by copious bleedings, still continue their course, whether they are to terminate in health or death. There are, I think, but very few cases in which a disease can be thus removed all at once by a bleeding.

that he felt an acute pain in the epigastrium, which the least pressure increased, and which extended to the lower part of the sternum, and to the precordial region. The pains of the limbs entirely disappeared. Still the patient had no cough ; the chest, when struck, sounded well everywhere ; everywhere also the respiration was strong, but clear ; pulse very frequent, regular, and remarkably hard, whilst the beating of the heart was heard everywhere with the stethoscope but very feebly ; the ear applied immediately over the region of the heart distinguished merely a confused murmur, which did not allow one to recognise the pulsations of either the ventricles or the auricles. This group of symptoms, and at the same time the absence of every sign of an inflammation of the pleuræ, or of the lungs, inclined us to suspect the existence of a pericarditis. Forty leeches were applied to the precordial region, and a few hours after the epigastrium was covered with a blister.

The patient found himself considerably relieved in the course of the day ; but in the evening there was a return of the symptoms, great fever, considerable dyspnœa, a threatening of suffocation. He was instantly bled to a large amount ; the blood hardly began to flow, when the respiration became freer ; the same appearance of the blood as in the two previous bleedings.

On the morning of the 28th, the state of the patient was very much improved ; the respiration was more calm ; the pulse less frequent, and of almost the natural strength ; the pain of the epigastrium and of the precordial region was gone.

On the 29th, the respiration again became very much embarrassed ; pulse recovered its great frequency and hardness ; a sort of a tumultuous, indefinable murmur was heard in the region of the heart. By means of percussion a duller sound was heard here than on the preceding days ; the pain of the epigastrium and of the precordial region reappeared. The several bleedings having produced each time a visible amelioration, recourse was had to them again. (Three palettes of blood were again taken ; twelve leeches applied to the region of the heart.) The blister to the epigastrium, which was now dry, was replaced by two blisters to the legs.

On the 30th, the respiration, which was still accelerated, was less difficult than on the preceding day. The patient no longer felt any pain ; his countenance was considerably calmer and more natural ; pulse retained its strength ; the blood presented an appearance similar to that on the former occasions. (Fifteen leeches to the region of the heart.)

The same state continued during the day. At eight o'clock at night the patient was calm ; his countenance not altered ; his respiration appeared tolerably free ; he spoke with ease, sat up without much difficulty, and suffered no pain. He died suddenly at eleven o'clock at night.

The body was examined nine hours after death.

Neither the brain nor its membranes presented any appreciable lesion. Each of the lateral ventricles contained two or three small spoonsful of limpid serum.

The lungs were healthy ; the cavity of the pericardium contained somewhat more than half a litre of turbid serum ; the portions of serous membrane covering the heart, and that lining the fibrous fold, were covered through their entire extent by a false membrane, which being marked with numerous asperities, presented an appearance somewhat similar to that of the second stomach of ruminant animals, known by the name of *paunch* (*panse*).

This species of mamillated false membrane was already noticed by Corvisart and Laennec, as a particular form of pseudo-membrane, which these great observers never met but in the pericardium. Along the furrow which marks the place of union of the two ventricles, as also at the apex of the heart, albuminous, membraniform concretions existed, such as those usually found in inflamed serous membranes. In two or three points we found extended, from one of the surfaces of the serous membrane to the other, long whitish bands, very soft, and which were torn by the slightest force. The tissue of the heart was very pale; its cavities contained fibrinous clots partly deprived of colouring matter, which extended into the vessels.

Remarks.—Here again, as in the preceding case, the inflammation of the pericardium appeared to arise at the same time that the rheumatic affection of the limbs disappeared. The pain, which marked the attack of pericarditis, was at first wandering, and not considerable; perhaps too, at its outset, it was not occasioned by the disease of the pericardium. The rheumatism commenced in some degree by attacking the thoracic parietes, where wandering pains indicated its presence; then these pains became more acute, and occupied successively the epigastrium, base of the sternum, and the precordial region; though very acute, they never were so severe as in the patient who forms the subject of the preceding case. In that person they ceased only with life; in the negro, on the contrary, they were not continued, and that was another feature of resemblance with the rheumatic affection. Several times during the course of the disease we observed the dyspnœa and general anxiety to disappear with the pain. What was very extraordinary, death did not supervene in the midst of an increase of the pain, or during an attack of dyspnœa; it occurred when there was now a visible improvement, and when the disease seemed beginning to progress towards a resolution. The pulse, different from that presented by the patient in the first case, was constantly full, hard, and regular; the pulsations of the heart were at the same time very obscure. This is just the reverse of what is observed in other circumstances, where the lesion of the pericardium is however still the same: but the heart is otherwise irritated, and the nervous system otherwise influenced.

CASE 3.—*Pain in the region of the heart, radiating at intervals to the left arm—Beatings of the heart very strong at the outset, but subsequently very obscure; pulse all through very small and regular—Sound dull in the precordial region—Great dyspnœa—Effusion of blood into the pericardium.*

A shoemaker, thirty-one years of age, was admitted into the La Charité, the 6th of November, 1821. On the 4th of the same month, he had been seized with a shivering and general illness; on the night of the 4th, he had, he said, considerable fever. On the morning of the 5th, he felt an acute pain on the level of, and anterior to, the left breast. This continued on the 6th. On the 7th, he presented the following state:—Countenance pale, and expressive of suffering and anxiety; risus sardonicus from time to time, a convulsive trembling of the lips. The pain of the precordial region was not very intense; but it increased from time to time, became much more severe, and then was not confined to the region of the heart; it spread over all the left side of the thorax; at the same time, all the upper extremity of this same side became the seat of well-marked numbness, which was sometimes succeeded by an acute pain, which lasted only for some moments, and which was seated principally in the anterior surface of the arm and fore-arm. Every time the pain thus became more acute the respiration became at once very difficult; the pulsations of the heart became very tumultuous and extremely irregular; the pulse was no longer perceptible; an icy coldness spread over the extremities. On the pain again diminishing, the respiration presented merely a slight difficulty, the pulsations of the heart retained their strength; they were heard over the entire extent of the anterior part of the thorax; but they recovered some regularity, and the pulse rose a little, though it always continued very small compared with the strength of the heart's pulsations. The patient coughed a little; the chest, however, was everywhere sonorous, and the respiratory murmur was heard everywhere with strength and clearness. This aggregate of symptoms presented several traits of resemblance to those which have been considered as belonging to angina pectoris. They were referred to an inflammation of the pericardium. (Venesection to sixteen ounces; thirty leeches to the precordial region; sinapisms around the knees.)

After the bleeding and the application of the leeches, the paroxysms of pain became less severe and less frequent; the night was passed better than those preceding it.

On the morning of the 8th, the patient complained of a feeling of tightness rather than a real pain in the region of the heart. The pulsations of the heart not so strong, the pulse always very small and of great frequency. The breathing was but little embarrassed. In the course of the day the pain of the heart again reappeared with violence three or four times, and each time it extended to all the left side of the thorax, with marked numbness of the arm, fore-arm, and hand of this side. In the night, he was bled to twelve ounces. On the right his state nearly the same.

On the 10th November, the sixth day of the disease, new symptoms appeared: the pain no longer existed; the countenance recovered a more natural appearance; the pulsations of the heart were less strong and less extended; the pulse still very small. Some hours after the visit, without any reappearance of the pain, the patient was seized all at once with great dyspnœa, which went on increasing till the following morning. Then, on examining the region of the heart with the stethoscope, we were not a little astonished at no longer hearing its pulsations, which were till then so strong, except in a very obscure manner; the pulse was smaller than ever; the chest was percussed again, and for the first time we discovered on the left side the existence of a very dull sound from above downwards, from the level of the fourth rib to that of the ninth or tenth, and transversely from the breast nearly to all the left half of the sternum inclusive. Lying down in the horizontal position was now become impossible; the patient being placed sitting up, could scarcely pronounce a few words with a panting breath; he said he felt as if an iron chain was violently compressing his chest, and choking him. (Two blisters to the thighs.) In the course of the day, the oppression became more and more considerable, and the patient died in the night.

Post mortem. The parietes of the thorax were scarcely raised, when we saw to project before the heart and lungs an enormous sac which compressed the latter, and which proved to be the pericardium distended by nearly a litre of a brownish red liquid, similar to blood flowing from a vein. The inner surface of the pericardium was also lined with membranous concretions of a red colour; lungs very much engorged with blood, as was also the liver; well-marked venous injection of the intestinal canal, visible serous infiltration of the subarachnoid cellular tissue of the convexity of the cerebral hemispheres; white substance of the brain presented a considerable number of red points.

Remarks.—This case presents other symptoms different from the two cases preceding it. These symptoms may be divided into two series, with respect to the organic change which seems to have given rise to them. In the first series we shall arrange those presented by the patient from the commencement of the pericarditis up to the ninth day. These symptoms depend on a lesion of the pericardium, similar to that which existed in the two preceding cases; and still these symptoms were no longer those merely noticed in cases 1 and 2. Here again, indeed, we find anomalies both in the beating of the heart and in the pulse; but these anomalies are not precisely the same: the pulse, for instance, is small, as in the first case, and regular, as in the second. We find that there is pain; but this pain has very remarkable characters; it becomes acute only at intervals; being almost entirely intermittent, and radiating far from the place of its origin, it might be taken for the consequence of a neurosis*.

---

* These same symptoms are produced, in fact, in several cases, in which they can be referred only to an affection purely nervous. We have seen at the La Charité a young woman who, from time to time, felt an acute pain in the region of the heart; from this

On the ninth day and the beginning of the tenth, a perceptible amendment took place ; but all at once a new disease recommences, or rather the pericarditis, which seemed progressing towards a resolution, assumes a new character ; then it is no longer a small quantity of purulent matter, of coagulable lymph, which, under the influence of the inflammatory process, is secreted by the pericardium ; it becomes the seat of an abundant and sudden hemorrhage ; in a few hours its cavity is filled and distended with an enormous quantity of blood ; from thenceforth there is constantly increasing difficulty in the motions of the heart, and compression of the lungs ; death by asphyxia. How different the symptoms would have been, if the effusion had taken place gradually, of which we shall presently see some instances.

CASE 4.—*Symptoms of pericarditis—Cure.*

A stone-cutter, 39 years of age, was ill for ten days, when he entered the hospital the beginning of May 1823. He had first some signs of cerebral congestion, then there was some fever, and for the last four days he complained of an acute pain below the xiphoid cartilage. He was bled on the day of his admission. The headach and dizziness diminished after the bleeding ; but the pain in the epigastrium became more acute, and extended to the space between the breast and sternum. The application of twenty-four leeches to the epigastrium gave no relief, and on the 9th of May, the symptoms were very serious ; he complained of intolerable pain in the precordial region ; that of the epigastrium was considerably diminished ; the latter was not increased either by pressure or by inspiration ; the patient thought it less when he lay on the back, than on either side ; the beatings of the heart, which were calm and regular the day before, were now become irregular and tumultuous ; the pulse was also very irregular, frequent, and of ordinary strength. No symptom indicated any affection of the lung or the pleuræ ; whence we were induced to suspect a pericarditis : this was met by another bleeding of twelve ounces, and the application of forty leeches to the precordial region. The next day the alarming symptoms partly disappeared : the patient complained merely of slight pain in the region of the heart ; the beatings of the heart, as well as the pulse, had lost their great irregularity ; still there was some fever, and the breathing was not yet free. It was evident that the inflammation of the pericardium had been arrested in its progress, but it still continued. To adopt an expectant treatment was to run the risk of seeing the inflammation, which was only stopped, become again lighted up, and proceed with new activity, or else, a thing not less dangerous, pass into the chronic state. Thoroughly convinced that there was in this case only an amendment of the symptoms, and that the disease was only suspended, but not entirely removed, as was proved by the symptoms which still remained, M. Lerminier recommenced the same line of treatment which on the preceding day appeared so efficacious ; the same quantity of blood was taken ; the same number of leeches were applied, and a large blister was placed on the interior of each thigh. In the twenty-four hours following, the patient became better and better, and on the 12th of May, he was completely convalescent, and soon left the hospital perfectly restored.

---

region the pain radiated to different points of the thorax, and down the arms. The latter were often affected with a numbness, which sometimes proceeded as far as complete paralysis : the patient felt at intervals violent palpitations, during which the pulse became thready. These different symptoms, however, disappeared after having lasted from some minutes up to twenty-four or thirty hours ; during the intervals between them, nothing unusual was observed in the circulatory apparatus. These symptoms were often succeeded by other nervous phenomena, such as convulsive movements, partial or general, alternations of exaltation and abolition of sensibility, symptoms of chorea. In the midst of these different functional disturbances, why not recognise one and the same disease, the symptoms of which may vary with the seat. but the nature of which remains identical ? I would have no hesitation in saying that this woman had from time to time *chorea of the heart.*

Remarks.—Though it is not quite certain, yet it is very probable, that this was a case of pericarditis checked by a very active antiphlogistic treatment. The bleedings resorted to the day following the improvement of the 10th of May, were perhaps as useful as those employed on the 9th; they completed the good effects of the former. Too often an acute inflammation terminates unfavourably, less because it was not combated when its symptoms were very evident, than because it is too soon considered to be altogether removed. Persons have no notion that the morbid process, which is going on in an inflamed organ, still oftentimes continues after its most prominent symptoms have disappeared; it is then, however, that the physician should redouble his attention, and that his task becomes more difficult: he should then interrogate every the least symptom, and not give over combating the enemy as long as he gives the slightest indication of his presence. How many inflammations thus lying dormant for some days, and considered as terminated, have all at once awakened and ended in death? How many states called states of convalescence are but the passage from the acute to the chronic stage of the inflammation?

The commencement of the disease is also deserving of attention. This is one of those cases so frequently occurring in the practice of medicine, where several organs appear to be simultaneously or by turns the seat of sanguineous congestions, without any of them appearing to be actually inflamed [*]. Oftentimes the individual returns to health, after congestions of this description have thus traversed most of the organs, without the affection of any of them having been predominant; this is what several authors have called *general illness* (*maladie générale*), a very vague term signifying nothing else, when applied to the solids, than the simultaneous affection of several tissues, organs, or sets of organs. At other times it happens that after the disease has been thus *general* [†], in the sense just now explained, the affection of some one organ becomes predominant; this was the second stage observed in our patient.

In the several cases now cited the pericarditis was announced by a group of symptoms which rendered its diagnosis sufficiently easy; we shall now give some cases in which the most prominent of these symptoms, the pain, no longer existing, it is, in some measure, only negatively or by the process of remotion, that we can recognise the inflammation of the pericardium.

ARTICLE II.

CASES OF ACUTE PERICARDITIS WITHOUT PAIN, BUT WITH DYSPNŒA.

CASE 5.—*Pulmonary tubercles—Breathing very little embarrassed—All at once great dyspnœa—Sudden death—Purulent effusion into the pericardium.*

A shoemaker, 28 years of age, troubled with a cough for the last 22 months, and having expectorated a considerable quantity for the first time, fifteen days before entering the hospital, presented all the symptoms of pulmonary phthisis now in an advanced stage, when we saw him the beginning of June 1824. Breathing quite free. Heart when examined presented nothing remarkable ; some gargouillement was heard at the summit of both lungs ; appetite good ; stools regular. No new symptom up to the 17th of June, except a little diarrhœa, and great loss of appetite. On the 17th of June, the patient had a greater appearance of suffering than usual ; his features were very much altered ; he complained for the first time of his breathing being embarrassed ; in fact he spoke with a sort of panting voice, and the respiratory movements were perceptibly hurried ; pulse was small and very frequent. On the 18th, his state was the same. Did not these new symptoms depend on the presence of a pneumonia, which, in consequence either of its seat, or the preceding state of the lungs, escaped detection by the stethoscope ? (Bleeding to eight ounces.) The blood drawn from the vein presented a thin, greenish coat. On the 19th and 20th, the oppression became still greater ; M. Lerminier compared the state of the patient to that presented by phthisical patients, who labour at the same time under organic disease of the heart. Face somewhat swollen, eye-lids a little infiltrated, lips swelled and of a purple colour. Pulse very frequent, and somewhat irregular in the strength of its beats ; from time to time, nearly every fifteen pulsations, it presented a well-marked intermission. The heart was heard without any impulsion and to rather a small extent. The extreme frequency of its pulsations prevented them from being severally distinguished ; they presented also the same intermissions as those of the artery. (Blisters to the legs.) On the 21st, the irregularity and intermission of the pulse still more marked. On the 22nd, orthopnœa; commencement of the tracheal râle. He died in the evening.

---

[*] I have endeavoured to show in another work (*Precis d'Anatomie Pathologique*) that it is impossible to draw a well-marked line of demarcation between sanguineous congestion, or *hyperemia*, and what is called *inflammation*.

[†] In the present state of science we have still, however, need of this term to aid us in connecting with their true cause those common morbid states in which there occur, simultaneously or successively, a great number of disturbances, organic or functional, the common tie of which seems to be a lesion of the innervation or of hæmatosis. In such cases there is, no doubt, a starting point, but how are we to assign the limits of the disease? Does it not exist in every part where there are blood and nerves?

Post mortem. Tubercular excavations in the upper lobe of the two lungs ; miliary tubercles in the other lobes. From the symptoms it was probable that we should find some disease of the heart. The substance of this organ presented merely slight hypertrophy of the left ventricle ; but in the pericardium there was found a sero-purulent effusion, with membranous concretions on its parietes. There was besides considerable injection of the mucous membrane of the stomach, and some redness, without ulceration, in the large intestine, which was very contracted.

Remarks.—Here was a case of pericarditis very different from the preceding in several respects. First the outset was marked by symptoms much less serious ; nothing was observed but an unusual embarrassment in the breathing. There was throughout total absence of pain. However, on some days all the symptoms which indicate aneurism of the heart manifested themselves : but this aneurism could not have formed all at once ; how then should it have given no sign of its existence from the time of the patient's admission up to the 17th of June ? Up to this day the pulse in particular was very regular. The autopsy showed that the symptoms observed from the 17th of June, did not depend on aneurism, but on pericarditis. This fact proves then that there are certain forms of inflammation of the pericardium, which influence the motions of the heart so as to give rise to a disturbance of the circulation, which produces the same phenomena as those observed at a certain period of aneurism of the heart.

Case 6.—*Slight asthma for several years—All at once extreme dyspnœa, the constant increase of which causes death by asphyxia—Serous effusion into the pericardium.*

A tailor, twenty years of age, habitually enjoyed good health, for he did not consider as a morbid state, the slight difficulty of breathing which he felt for several years back whenever he ascended a height or ran. He had lately spent several nights at work. For some days he had cough, when on the 2nd of March 1820, without any known cause, he was seized all at once with great dyspnœa; the same night he was bled. The 3rd and 4th there was an increase of the oppression. He entered the La Charité on the evening of the 5th, and was bled again; on the 6th, face puffed and livid; lips violet; lies on his back with the neck tense, and the head retroverted. Sixty-five inspirations per minute; they are performed at once by the elevation of the ribs and depression of the diaphragm. The respiratory murmur was heard everywhere with strength and distinctness, except towards the inferior angle of the scapula of the right side, where a little mucous râle was heard, owing to the bronchitis which existed for some days back. The chest, when percussed, sounded well everywhere, except at the region of the heart, where the sound was dull. No thoracic pain either had been or was at present felt by the patient; his expectoration was purely catarrhal. The beats of the heart, which were regular, were heard with a slight impulsion in the precordial region: the hand, when applied over this region, recognised merely a sort of vague murmur (*bruissement*), where percussion detected the dull sound. The pulse was regular, but hard and vibrating, and its frequency was proportioned to that of the inspirations: the skin was hot and dry.

What was the cause of the asphyxia in the case of this patient? It seemed neither to reside in the pleuræ, nor in the pulmonary parenchyma, nor in the bronchi. By thus reasoning we came to suspect the existence of an affection of the pericardium. The dull sound at the region of the heart, the bruissement found on the application of the hand over this region, indicated even an effusion into this membranous sac. (A third bleeding, thirty leeches to the epigastrium; in the night sinapisms to the legs.) In the evening the patient had a general and a very copious perspiration; but it gave no relief. On the morning of the 7th, suffocation still more and more imminent, continuance of the hardness of the pulse. (Blisters to the thighs; purgative lavement.) He died in the night, five days after the commencement of the dyspnœa.

Post mortem fourteen hours after death. The pericardium, when viewed externally, presented considerable distension; it contained nearly a litre of limpid colourless serum, in the midst of which small albuminous flocculi floated. The inner surface of the pericardium presented no inflammatory appearance. The parietes of the left ventricle of the heart were but slightly hypertrophied. The bronchi in general were red, the pulmonary parenchyma infarcted, the liver engorged with blood, and the digestive canal injected.

Remarks.—With respect to the great quantity of liquid effused into the pericardium, this case bears some resemblance to Case 3; but in the latter the effusion was formed by blood; in the present case it consisted of nearly pure serum, which seemed rather the result of simple active exhalation, than of inflammation properly so called. But who can assign the precise limits which strictly separate these two affections, which in several cases at least appear but different forms of one and the same primary phenomenon? Be that as it may, the existence of this effusion was indicated by the dull sound and the peculiar bruissement discovered by the hand when applied over the region of the heart. Besides, the beats of the heart, as well as the pulse, preserved great regularity; the pulse continued hard and vibrating. Here are phenomena different from those observed in Case 5; and yet in the two cases there was one and the same state of hypertrophy of the heart. It might be said that here the pulse remained under the influence of this hypertrophy, whilst in Case 5, it was modified by the pericarditis. Here, again, there was total absence of pain: is it because there was here but hydro-pericardium? But in Case 5, it was pus that was contained in the envelope of the heart, and the pericarditis was equally free from pain. Before terminating these reflections, we shall remark, as an accessory circumstance, the slight commencement of asthma observed in this individual, and which was attributable to simple hypertrophy of the left ventricle of the heart, without any obstacle to the orifices, and without any affection in the right side of the heart.

CASE 7.—*Confluent small pox—Complication of pericarditis, announced merely by great dyspnœa.*

A young man, seventeen years old, entered the La Charité during the year 1818, on the third day of the eruption of a well-marked small pox. The pustules were everywhere very numerous. The symptoms were in other respects very mild up to the 7th day, the eruption proceeded very well, no complication interfering with it; but at the time the pustules began to be in a perfect state of suppuration, the respiration suddenly became embarrassed, without there being either cough or bloody expectoration. The two following days the eruption became stationary; several of the pustules became black; others became filled with a reddish serum; livid petechiæ appeared in the intervals between them; the patient fell rapidly into the last degree of prostration, though the tongue continued moist and whitish; the dyspnœa went on increasing, and death took place the beginning of the 10th day.

Post mortem. The only lesions found were a sero-purulent effusion into the pericardium, and a considerable injection of the mucous membrane of the stomach.

Remarks.—This case, which is incomplete with respect to the description of several symptoms, and in particular those furnished by the heart and pulse, is not devoid of interest, by reason of the species of complication of which it affords an instance. We have here an example of what is called malignant small pox, the alarming symptoms and fatal termination of which may be explained by the complication of an internal inflammation. When this inflammation is a meningitis, a pneumonia, a pleuritis, a gastro-enterite, the diagnosis is always sufficiently easy, and the judicious employment of the antiphlogistic treatment then presents many chances of success. But here, what symptom could reveal the nature of the internal lesion? The bad aspect which the eruption assumed all at once, the petechiæ which appeared, the sudden prostration of strength, and a remarkable dyspnœa, such were the morbid phenomena, the cause of which was to be ascertained. With the ancients these phenomena would have commenced the existence of what they called putrid or malignant small pox. No doubt, in fact, but that in consequence probably of the disturbance occasioned to the nervous system by the affection of the skin, there are observed during the course of certain cases of small pox, extraordinary and irregular symptoms, the cause of which pathological anatomy does not reveal. This happens not only in small pox but in all the acute cutaneous exanthemata. Some months since we examined the body of a woman, who, at the commencement of an eruption of measles, was seized with a slight delirium, and died unexpectedly, without any alarming symptom having announced this fatal symptom some hours before death. The examination of the body, which was conducted with the utmost care, presented all the organs in a sound state, except the bronchi, which were very much injected (as must take place in all cases of measles). In our patient, as in this woman, there was merely a disturbance, or perversion of the functions of the nervous system; and could either the dyspnœa, or the change in the appearance of the eruption, be referred to the morbid modification of the innervation? That which seemed at least very certain, is, that the extreme prostration, into which the patient fell suddenly, succeeded the very satisfactory state of the strength too rapidly to be considered as real. Did it depend on any internal inflammation? We were very much disposed to admit it, though we could not point out its seat. The dyspnœa seemed, however, to indicate some lesion of the organs of respiration or of circulation. The post mortem examination showed the cause of it to reside in an inflammation of the pericardium. A very striking example, no doubt, of the obscurity of the diagnosis in this disease, of the influence it may exercise over the variolic eruption, and lastly of the great prostration which it may suddenly produce.

In the case just now cited, the dyspnœa is the only sign remaining, capable of announcing that there is an affection of the thoracic organs; by proceeding on the process of exclusion, as we have already stated, we may again, in this case, go so far as to recognise, or at least to suspect, the existence of a pericarditis. But there are cases still more obscure, in which there is no longer even a perceptible difficulty of breathing, and where, though the affection is seated in the thorax, there is no symptom indicating such a seat. We shall cite a case of this kind, observed at the La Charité; we shall then annex another of a similar nature, contained in the work of M. Rostan, on *Softening of the Brain.*

ARTICLE III.

CASES OF ACUTE PERICARDITIS WITHOUT ANY CHARACTERISTIC SYMPTOM.

CASE 8.—*Symptoms of meningitis—Acute inflammation of the pericardium.*

A woman, twenty-six years of age, the mother of two children, and who recently had had a miscarriage, entered the La Charité in the beginning of the year 1820, in such a state of delirium, that no information could be obtained regarding her previous history. This delirium was remarkable for the obstinate silence which accompanied it; when interrogated, she fixed her eyes steadfastly without answering; countenance pale; her lips, separated from each other, and agitated from time to time by a convulsive tremor, allowed us to see the tongue, which was moist and white. The pulse was frequent and small, but in other respects regular; skin not very hot. (Leeches behind the ears.) The two following days there was frequent retroversion of the head, sudden rising of the trunk at intervals, subsultus tendinum; the patient speaks and seems to understand, but what she says is incoherent. Countenance still pale; pulse, which is very frequent, intermits. On the 4th day of her admission the delirium was gone: she complained only of great debility; the muscles of the face were agitated by convulsive movements, which were nearly constant; the upper extremities presented from time to time a sort of tetanic rigidity. On the 5th day the delirium returned; the features became immoveable and quite altered; the upper extremities, when raised, fell back by their own weight, as if they were paralysed; in the course of the day the patient fell into a state of coma, and died in the night.

Post mortem. Slight injection of the mucous membrane of the digestive canal in some points. Infarction of the posterior part of the lungs. The pericardium was lined interiorly with albuminous concretions, some of which extended like bands, still soft, from one of its surfaces to the other; some ounces of a greenish flocculent serum were also found effused.

Remarks.—In this patient, the seat of all the symptoms resided evidently in the nervous centres. But were the latter idiopathically affected? or were they but sympathetically so? and was not the origin and true cause of the disease in the inflammation of the pericardium?

The case published by M. Rostan, as well as that now recorded, presents certain cerebral symptoms, for the explanation of which no other lesion is found than a pericarditis; notwithstanding the obscurity and unusual form of its symptoms, this inflammation was diagnosed by M. Rostan. Here is a summary of the case: A woman, after two days' general illness, fell all at once into a profound loss of consciousness.

The next day, eyes fixed, eyelids open, face flushed ; almost absolute immobility of the limbs, which ceased, however, when they were pinched. Pulse scarcely perceptible, no more than the beats of the heart. Death on the fourth day. Bloody serum in the pericardium, with false membrane on its surface*.

The fact contained in the 8th case, and that recorded by M. Rostan, are well calculated to prove that, in proportion to individual susceptibilities, there is no organ whose lesion may not give rise to nervous symptoms the most varied, so as to produce sympathetically the different morbid states, the seat of which is placed in the nervous centres and their appendages. It has been truly stated, that the inflamed digestive canal, more frequently than any other organ, reacts upon the brain, and gives rise to the symptoms of an arachnitis or an encephalitis. But it is no less true, as M. Boisseau in particular has clearly shown, that inflammations of the other organs, by their sympathetic influence on the brain, may also occasion the different groups of symptoms which constitute what is called ataxic fever†.

CHAPTER II.

OBSERVATIONS ON CHRONIC PERICARDITIS.

4. We have seen in the preceding article, how variable, and oftentimes obscure, were the symptoms of acute inflammation of the pericardium. Its chronic inflammation presents itself, in certain cases, under such a form, that it gives rise to most of the general symptoms which characterise an organic affection of the heart, and particularly to dropsy. The following cases will illustrate these observations :—

CASE 9.—*Very thick false membranes around the heart—Symptoms of aneurism.*

A mason, twenty-five years of age, enjoyed good health up to the middle of December, 1823 ; he then caught cold, which became more and more distressing.

---

* Rostan, *Recherches sur le Ramollissement du Cerveau*, page 233.

† The cases now cited may give an idea of the great variety of the symptoms which accompany acute pericarditis. In one and the same subject there may be found combined an acute pain in the region of the heart, a dull sound in this same region, considerable dyspnœa, great acceleration in the beats of the heart and pulse, remarkable irregularity in these beats, unusual strength in those of the heart, whilst those of the artery are, on the contrary, very weak ; syncope ; at the same time there exists no sign of disease of the lung or pleuræ ; in such a case there is no difficulty in the diagnosis. But most of these symptoms may be wanting, or present themselves separated from each other. Thus there are some cases of acute pericarditis, which are accompanied by no pain, or which are marked by a very slightly marked pain, either seated in some place different from the region of the heart, or intermittent. There are other cases of pericarditis in which the beats of the heart are neither stronger nor weaker than in the ordinary state ; they are more or less frequent. The pulse, oftentimes remarkable for its extreme smallness, presents at other times an unusual hardness ; irregular in some, it presents in others its normal rhythm. The dulness of sound may be wanting, since it depends on the effusion which has taken place into the pericardium, and since death may supervene, or a cure be effected before the effusion has taken place. With respect to the dyspnœa, it is sometimes the only symptom produced by the pericarditis ; but this dyspnœa may itself be wanting ; and in some cases, where up to the period of death the respiration had remained perfectly free, where no pain was felt in the precordial region, a pericarditis has been found with production of recent false membranes, or effusion of pus. There are, in fine, other cases, where signs of pneumonia or pleuritis coincide with this dyspnœa; and if no pain exists in the region of the heart, there no longer remains any sign to detect the pericarditis, but the dulness of sound in this region. But this sign, besides that it may be wanting, again loses much of its value, if there exists at the same time on the left side a pleuritic effusion, or a pneumonia.

In January, 1824, he began to feel a little dyspnœa; the lower extremities, and then the abdomen, became swollen. Having entered the La Charité towards the month of February, 1824, he presented the following state:—

Livid hue of the countenance; lips of a violet colour; infiltration of the lower extremities; ascites. The respiration short and hurried. Some mucous râle audible in different points of the thorax; the chest when percussed sounded well everywhere; cough frequent, with mucous expectoration; the beats of the heart presented nothing unusual with respect to their strength and their extent; but they were intermittent, as were also the arterial pulsations, which were at the same time remarkably small. The patient never felt any pain in the precordial region. Tongue natural; appetite good; taking food into the stomach soon followed by an increase in the dyspnœa. Diarrhœa for the last three months. The urine, small in quantity, is characterised by a reddish deposit. Skin constantly dry.

The existence of an organic affection of the heart must here be naturally suspected; the intermissions of the pulse seemed to announce some obstacle at the origin of the aorta, a disease of the valves, connected probably with dilatation of the cavities of the heart; this was, in fact, what we found in other patients who presented the same group of symptoms, whether local or general. (Blisters to the legs; frictions with a mixture of squill wine and camphorated spirit; juniper fumigations, with diuretic drinks.)

On the following days, urine more copious and clear; breathing freer; dropsical effusion lessened.

On the 5th of March, the state of the patient became worse without any known cause: the right hand was puffed for the first time; the embarrassment of the respiration renders it impossible to lie in the horizontal position, and the patient is obliged to be half sitting up in the bed. Pulse very small and irregular; the diarrhœa continues without any pain. (Two more blisters to the thighs.)

For the five days following, the patient did not become worse, he presented no new symptom. Died suddenly on the 10th of March.

Post mortem. The two folds of the pericardium adhered closely throughout their whole extent. Their mode of union was by membraniform layers more than an inch in thickness, which envelope the heart in a sort of shell. They had the solidity of fibrine which has remained for a long time deposited in aneurismal sacs; they are moreover of the same colour as it, being pale and white externally, becoming reddish near the heart, and then resembling flesh. The inner surface of the stomach covered with red points. Through its entire length the intestine was injected; the mucous membrane of the large intestine was softened. The liver and spleen were gorged with blood, as were also the abdominal veins; old cellular adhesions united the liver and diaphragm. The encephalon and its appendages presented a paleness of colour which contrasted very strongly with the general injection of the other organs. The ventricles contained but very little serum.

Remarks.—What symptom was there in this patient indicating chronic pericarditis. This inflammation seemed to commence here imperceptibly; no pain marked its invasion. On the other hand, the progress of the disease, the symptoms which existed, and in particular the mode of breathing, the infiltration of the limbs, the ascites, the intermittent state of the pulse, all seemed to announce an organic affection of the heart. Neither the application of the hand over the precordial region, nor auscultation, discovered anything more than irregularity in the heart's action. But we shall see hereafter, that in several cases of organic affections of the heart, no local sign reveals their existence. Here, however, the substance of the heart itself was not diseased; but it seemed that this organ had been, as it were, compressed and embarrassed in its movements by the thick and solid envelope which surrounded it on all sides: thence, embarrassments in the pulmonary circulation, and consequently dyspnœa; thence, also, an obstacle to the free return of the blood of the venæ cavæ, and in consequence thereof dropsy. Thus, then, all the phenomena resulting from an aneurism of the heart were here produced by false membranes developed around this organ.

CASE 10.—*Very thick pseudo-membranes around the heart—Dropsy—Extreme frequency of the pulse—Pericarditis recognised during life.*

A man, of nearly the same age as the preceding, had always enjoyed good health, when, during the month of April, 1825, he felt all at once violent palpitations of the heart, with dyspnœa and fever. He was admitted into the Hôtel-Dieu, and bled there several times, and under the treatment there adopted, the difficulty of breathing was considerably diminished, which induced the patient, who now felt himself much relieved, to quit the hospital. Some time after he entered the La Charité. He did not then complain of palpitation: he could lie in any position; the hand and ear applied over the precordial region recognised nothing but extreme frequency in the beats of the heart. The respiratory murmur was heard generally with clearness and strength. The pulse, which was regular and of the ordinary strength, *was more than* 140; the temperature of the skin was not increased; there was no fever, properly speaking. The lower extremities were beginning to be infiltrated.

The most prominent morbid phenomenon presented by this patient was the extreme frequency of the pulse. This sign, added to the consideration of the progress of the disease, and of the other symptoms, induced us to suspect the existence of a pericarditis, though there never had been any pain in the precordial region. Bloodletting seemed to be no longer indicated. M. Lerminier prescribed blisters to the legs, diuretic mixture, and pills of digitalis. No benefit resulted from this treatment, and in consequence of vomiting having come on, the digitalis was given up. The infiltration of the lower extremities went on increasing, and the abdomen also soon began to become enlarged; then infiltration of the face commenced; the respiration, till then quite free, became embarrassed, and the patient's voice was panting, as in organic affections of the heart; the frequency of the pulse was always the same; the ascites increased. Such was the unfavourable state of this patient, when one day, on percussing the thorax, we detected the existence of a very dull sound on all the posterior part of the left side of the chest; all over this space there was total absence of the respiratory murmur, without the resonance of the voice being otherwise modified. Thus, for some days back, without any pain, without any perceptible change in the state of the patient, the left pleura seemed to have become the seat of an effusion. From this period the strength of the patient seemed to sink rapidly; his features were altered; severe diarrhœa came on, and he died after a few days.

Post mortem. Adhesion of the two folds of the pericardium; false membranes around the heart, forming for it, as in the preceding case, an envelope of more than an inch in thickness; in the midst of them were small whitish masses of an irregular form; some, which were still liquid, resembled pus; others, more solid and friable, had somewhat of the appearance of tubercles. The heart itself was exempt from any lesion. The left pleura was filled with a sero-purulent fluid. The pleura costalis, and pulmonalis of the right side were united by false membranes, which contained numerous tubercles similar to those of the pericardium. An abundance of serum effused into the peritoneum; a great number of red patches on the internal surface of the cæcum and of three-fourths of the colon.

Remarks.—There are two distinct periods to be remarked in this patient's case. First, the inflammation of the pericardium, at its commencement, produced no other phenomena than those resulting from sympathetic irritation of the heart: thence the violent palpitations and the dyspnœa. Thus, then, some palpitations may recognise for their cause an affection of the pericardium. However, there was no pain. Subsequently, and under the influence of a judicious antiphlogistic treatment, the pericarditis threw off its acute state ; then the palpitations ceased ; the breathing again became freer. But the disease was not yet removed ; it merely passed to the chronic stage, and then commenced the second period : from the increasing thickness of the pseudo-membranes secreted in the sac of the pericardium, there was formed a sort of envelope, which seemed to impede the freedom of the heart's movements ; thence appeared several of the symptoms characterising aneurism of this organ. As to local symptoms, there were none ; auscultation gave but negative information. But there was observed at the same time, and uniformly, a remarkable phenomenon—namely, extreme frequency of the pulse, which was not diminished even by the digitalis. The pleuritis on the left side, which presented itself towards the latter period, was not, any more than the pericarditis, announced by any pain ; it seemed to produce nothing more than an increase of the prostration ; it was the latter, in fine, carried to the last degree by the attack of colitis, which, though of trifling consequence under other circumstances, appears to have been here the cause of the patient's death.

If we now compare this patient with the subject of Case 9, we shall find as traits of resemblance—1st, one and the same alteration of the pericardium ; 2nd, the same state of infiltration, and other symptoms usually characterising an organic affection of the heart. But the commencement of the two diseases was not similar ; here there was an acute stage, which was wanting in the subject of Case 9. In this latter the pulse approached nearer to the pulse of diseases of the heart ; it was regular and intermittent. In the subject of Case 10, the pulse had a frequency seldom found in organic affections of the heart, and which led us to diagnose a pericarditis. Now, the lesion of the pericardium being the same in both individuals, why were the arterial pulsations so different? This comes to the same as asking why, in two individuals, whose meninges were inflamed in the same degree, and in the same part, there was in the one a state of coma, and in the other convulsions. Finally, in the subject of Case 9, death appears attributable to the affection of the pericardium itself ; in the subject of Case 10, it was principally the result of the double inflammation of the left pleura and the large intestine.

5. We have now seen two cases in which the chronic pericarditis gave rise to symptoms simulating those of an organic affection of the heart. But it may often exist, however, without producing either these symptoms or any other ; so that during life nothing leads us to suspect the existence of an affection of the heart or its appendages, and it is only after death the affection is discovered. It is the same in more than one case, where accidental productions are developed in the pericardium. A lapidary, thirty-three years of age, the history of whose case we shall give elsewhere* more in detail, died of chronic hepatitis, with inflammation of the peritoneum. During life no morbid phenomenon was discovered connected with the thorax. The breathing seemed to be uniformly free ; the heart's action appeared to be in its normal state. We found the external wall of the right ventricle surmounted from its apex, nearly to the junction of this ventricle with the auricle, by a rounded irregular tumour, the size of a pullet's egg, interposed between the substance of the heart, which remained intact, and the visceral reflexion of the pericardium, which was raised by it. This tumour consisted of a hard whitish tissue, traversed by some vessels, without any appearance of fibres (encephaloid substance in the state of crudity). No other lesion was presented by the heart or pericardium.

The observations on acute or chronic pericarditis now given, regarded cases in which the inflammation of the enveloping membrane of the heart was general.

---

* Diseases of the Liver.

But there are also cases where the pericarditis remains partial, and occupies a space of only some lines. Then it is not an alarming disease, and it often happens that the individuals so affected do not even keep the bed. As traces of this partial pericarditis, we find on the dead body either circumscribed white spots, which occupy some points of one or other surface of the heart, or cellular bands, extending from one of the reflexions of the pericardium to the other: these adhesions are partial, and are most frequently seen towards the apex of the heart. Those circumscribed inflammations of the pericardium seem to me to be at least one of the causes of the more or less acute pains experienced by some persons in the region of the heart. We have known persons who have been tormented with such pains for a very considerable time, without being ill in any other respect. Several, however, had palpitations, which reappeared whenever the pain became more acute. It must also be acknowledged that more than once the morbid changes in the pericardium just mentioned have been met, though during life the region of the heart had never been the seat of a pain remarkable either in severity or duration. Thus, among the individuals in whose pleuræ numerous adhesions are found, some have had, at different periods of their life, pains more or less intense in different points of the thoracic parietes, whilst the others never experienced them.

Some excellent observations on pericarditis may be found in Dr. Latham's Essays on Diseases of the Heart, contained in the third volume of the Medical Gazette: we shall take the liberty of citing a few of them. With respect to the symptoms of this affection, the following judicious remarks are made by this accomplished physician :—" In pericarditis a vast difference arises in respect to symptoms, according as the solid or the fluid products of inflammation predominate. It is in consequence of the products of the inflammation consisting chiefly of solid coagulable lymph, and of that lymph quickly producing a complete adhesion of the pericardium, and thus preventing the possibility of fluid being effused into its cavity, that the force and even the regularity of the heart's action, with which the disease began, is continued throughout its whole course, and that there is no absolute necessity of accommodating the trunk of the body to one constrained position."

" On the other hand, it is in consequence of the products of the inflammation consisting chiefly of fluid, whereby adhesion is prevented, and of the fluid continuing to increase, that the heart's action, from being violently excited, becomes soon scarcely perceptible, and fluttering and irregular; and that to swerve from one constrained position is at the peril of instant death."

The length of time during which life may be sustained in pericarditis, will also be considerably influenced by the nature of the products of inflammation. " Where the heart suddenly loses the force and rhythm of its action," (says Dr. Latham, loc. cit.) " and flutters, and falters, and stops, and gasping and fainting follow the least deviation from a given position, the patient will be quickly dead, if, by virtue of your remedies, you do not quickly change the conditions of his disease; and being dead, you will find the heart floating in the fluid which distends the bag of the pericardium. But where the heart still maintains the force and rhythm of its action, without any very urgent necessity of accommodating the body to one position (conditions which are consistent with the most acute inflammation), your patient will not die immediately, although your remedies do not procure the least mitigation of his disease, but he will continue to live probably for some weeks, and will then die, as if he were exhausted by the violent action of his vascular system; and being dead, you will find no fluid in the pericardium, but solid lymph accumulated upon it in quantity proportionate to the duration of the disease."

With a view of our forming some conjecture as to the period when the inflammation of the pericardium ceases, and there is no further deposition of lymph, Dr. L. says :—" When in pericarditis the strong impulse and sonorous contractions of the heart are gradually exchanged for a merely hurried circulation, and the fixed undeviating pain in the heart becomes a more general uneasiness about it, and, at the same time, the peculiar anxiety which has been mentioned is less and less apparent, we may pronounce with some confidence on the decline of the inflammation."—" But let it be borne in mind, that neither the decline of the inflammation, nor its absolute cessation, are the same thing with a reparation of the injury done to the organ. Reparation implies that no lymph remains upon its surface, and that the folds of the pericardium do not adhere. But organised lymph may still subsist after the inflammation has entirely passed away."

With respect to the symptoms of pericarditis, Dr. Elliotson, in his valuable work on " Disof the Heart," lays great stress "on the extension of the pain from the region of the heart to the scapula, shoulder, and a certain way down the arm—symptoms which patients will not always mention, unless questioned respecting them; and its increase on strong pressure upon or between the ribs and cartilages over the heart, and upwards under the cartilages of the left false ribs."

Dr. William Stokes, of Dublin, has written some excellent articles on the Diagnosis of Pericarditis, in the Dublin Journal of Medical and Chemical Science. (See Nos. for March and September, 1833.) The very flattering manner in which these articles have been noticed in all the foreign medical journals, and the well known pathological attainments of Dr. Stokes, preclude the necessity of any apology for inserting here the general results of his researches on this subject (pericarditis). We may here observe, that Andral considers auscultation to be merely of negative use in the diagnosis of pericarditis—it is only "par voie d' exclusion," to use his own words, that this diagnosis is in general to be attained. In this view of the matter he is joined by several other very distinguished pathologists, as Laennec, Louis, Rostan, Elliotson, &c. Dr. Stokes, loc. cit., says—"The direct diagnosis of pericarditis is founded on the observation of certain phenomena produced by the morbid condition of the serous surface of the pericardium; these are twofold; the phenomena perceptible by the hand, and secondly, those perceptible to the ear. In the natural state of all serous membranes, the gliding of one surface upon the other meets with no opposition, and is not accompanied by any sound; but when, from the effusion of lymph, for instance, these surfaces become for the time roughened, we have then sounds produced by the friction, and vibrations communicated to the surface, and often perceptible to the hand. It may be stated generally, that in cases of pericarditis, the sensations communicated to the hand, and the sounds of friction, will vary according to the following circumstances:—1st, The state of the effused lymph; 2nd, its extent; 3rd, the existence or non-existence of fluid; 4th, the advance or arrest of the process of organisation; 5th, the process of obliteration of the cavity; 6th, the repetitions of inflammation. The character of the sounds produced by the physical alterations of the inflamed pericardium are various. In some instances we have a rasping sound, very similar indeed to that produced in the worst causes of ossification of the valves; in others the sound resembles the creaking of new leather, to which it was originally compared by Collin. In others the sound is similar to the frottement of pleurisy, only modified by the action of the heart. It may further occur with a character between that of bruit de rape and bruit de soufflet, or it may completely resemble the latter phenomenon. Lastly, we may have a slight friction sound, perceptible only at the very commencement and at the termination of each diastole and systole of the heart." After considering the various circumstances which may modify these sounds, and the physical states of the pericardium, by which these modifications may be accounted for, Dr. S. lays down the following propositions as the general results of his researches on this subject:—

1. That in cases of pericarditis with effusion of lymph, the rubbing of the two roughened surfaces causes sounds perceptible to the ear, and vibrations communicable to the hand, by which the disease can be easily and surely recognised, even when all other symptoms are absent.
2. That the more rough is the state of the serous membrane, the more distinct will these signs be.
3. That the sounds accompany the two sounds of the heart in almost all cases.
4. That they are audible generally only over the region of the heart.
5. That they present themselves with various modifications of character, but often resemble the sounds produced by extensive valvular disease.
6. That they are most distinct when the region of the heart continues with its natural sound on percussion, but that the existence of fluid does not necessarily imply their complete subsidence.
7. That they may reappear after the absorption of fluid from the bag of the pericardium, or the new supervention of inflammation.
8. That the sounds may continue when the sensation of rubbing is no longer perceptible by the hand.
9. That they are singularly and rapidly modified by direct antiphlogistic treatment to the heart.
10. That by observing the progress and mutations of those signs, we can trace the process of organisation, or of obliteration of the pericardial cavity, judge of the effect of treatment, and accurately ascertain the exact state of the pericardium.
11. That hence, it must be admitted, that auscultation is of direct utility in pericarditis, and that the diagnosis no longer rests on negative signs.

With respect to the *treatment* of pericarditis, the necessity of employing mercury in conjunction with depleting measures, is now acknowledged on all hands. "From acute pericarditis," (says Dr. Latham, loc. cit.) "which has proceeded to the deposition of lymph, nothing, I believe, can ensure a perfect recovery but mercury so employed as to produce its peculiar and specific influence upon the constitution—mercury producing salivation." The ordinary depleting measures may arrest the progress of the inflammation, and thereby rescue the patient's life for a time; but yet, if after this has been accomplished, the adhesion should still remain, death will be the inevitable result.

There are some observations on pericarditis contained in the Clinique Médicale of M. Bricheteau (Paris, 1835). But this gentleman's opinions coincide so exactly on this subject with those of Dr. Stokes, from whose memoir, by the way, he has made copious extracts, that to cite them here would be mere repetition.—Tr.

SECTION II.

OBSERVATIONS ON DISEASES OF THE FLESHY SUBSTANCE OF THE HEART AND ITS INTERNAL MEMBRANE.

6. Under this title we comprise different alterations of texture, the result of which is a disproportion in the capacities of the four cavities of the heart, either with respect to each other, or with regard to the diameter of the vessels which terminate in this organ or arise from it. These alterations are numerous: they may, however, be divided into three classes; in one there is a diminution of capacity in one or more cavities; in the second, on the contrary, their capacity is increased. In these two cases the parietes of these cavities are either thicker or thinner than natural, and consequently their contraction is stronger or weaker. In a third class, there is no other change but an increase in thickness in the parietes of the cavities, the diameter of the latter still remaining the same. From these different modes of alteration, and from their seat in such and such a part of the heart, there result divers groups of symptoms, which, abstracting from the local symptoms produced by the unusual contractions of the heart, may be referred to the modification experienced, 1st, by the pulmonary circulation, whether arterial or venous; 2nd, by the general venous circulation; 3rd, by the aortic circulation.

Before pointing out the symptoms which manifest themselves during the course of diseases of the heart, we shall speak of the varied symptoms which mark their onset, and of the different lesions which these symptoms indicate. We shall suppose the pathological anatomy of these alterations to be known. What is there to be said new on this subject, after the excellent descriptions formerly given by Lancisi and Senac; more recently by Corvisart; and more recently still, and with much greater precision, by MM. Laennec, Bertin, and Bouillaud?

CHAPTER I.

LESIONS WHICH EXIST AT THE ONSET OF DISEASES OF THE HEART. SYMPTOMS OF THESE LESIONS.

7. A certain number of hypertrophies of the parietes of the heart, with or without modification in the calibre of its cavities, appear to me to recognise for their commencement an acute or chronic inflammation, either of the pericardium, or of the internal membrane of the heart, or of the aorta. We shall now present a resumé of our observations on this subject.

8. Individuals who had always enjoyed good health, who had presented no particular symptom, which could cause one to suspect in them the future existence of disease of the heart, are seized suddenly with an acute, excruciating pain in the precordial region; they feel violent palpitations, their respiration becomes very much embarrassed, their strength becomes suddenly prostrated, and they are confined to bed for several days: then these bad symptoms diminish; the pain disappears, the breathing becomes freer, the strength, which had been prostrated, returns. The individuals do not, however, recover their former state of health; they now have habitually a little dyspnœa, which goes on increasing; they frequently experience beatings of the heart, which are oftentimes preceded or accompanied by a renewal of the precordial pain. If they walk much, or remain for a long time in the erect posture, their ankles soon become infiltrated. These different symptoms become constantly more and more severe, and at last the existence of an aneurism is made manifest.

How shall we explain this succession of symptoms? To what organic cause shall we refer the sudden commencement of the disease? Certainly nothing resembles a pericarditis more than the group of symptoms which mark this commencement. Now, in every part where the muscles of organic life are in contact with an inflamed membrane (whether mucous or serous), they have a remarkable tendency to become the seat of a more active nutrition, to become hypertrophied. This is very manifest with respect to the fleshy tunic of the stomach, intestines and bladder, in cases of chronic inflammation of their mucous membrane. By analogy we must admit that inflammation of the membrane enveloping the heart must produce a similar effect in this muscle. Whether then the pericarditis, primarily acute, may have passed into the chronic state, or, whether this inflammation, though completely resolved, may however have impressed extraordinary activity on the heart's nutrition, the parietes of this organ must have a tendency to become hypertrophied; and if there is any thing to be wondered at, it is that they are not invariably found increased in thickness after all attacks of pericarditis.

A middle aged man was subject for a long time to rheumatic pains, remarkable for being very moveable. All at once those seated in the loins and in different parts of the limbs disappeared, and at the same time an excruciating pain was felt in the region of the heart, accompanied by the other symptoms mentioned in the preceding paragraph. Having entered the La Charité some months after, this patient presented all the signs characteristic of general hypertrophy of the heart, with dilatation of its cavities: he died. The organic lesion which had been announced was found in the heart; its orifices were free, but *cellular adhesions united the two folds of the pericardium to each other.*

9. If a pericarditis may be the commencement of a certain number of organic affections of the heart (and this fact seems to us incontestable), we shall be inclined to admit that other hypertrophies of the heart recognise for a primary cause an inflammation of the membrane which lines the inner surface of the ventricles and auricles, and which extends from these cavities either to the arteries or to the veins. The following facts lead us to think that this is not mere conjecture.

In several patients afflicted for a long time with different organic diseases of the heart, with well-marked symptoms, we have seen very remarkable phenomena suddenly develop themselves: the beats of the heart suddenly became more tumultuous than usual; the pulse was at the same time differently modified, sometimes very small and irregular, sometimes hard, vibrating, and in this latter case usually presenting much less irregularity. The breathing became very much embarrassed; the general anxiety was carried to the highest degree, and the region of the heart itself was sometimes the seat of the pain more or less acute. In some, these symptoms, after lasting for several days, disappeared; in others they became more and more severe, and ended in death. In the latter case we found on examination of the body, traces of inflammation on the inner surface of the cavities of the heart and great vessels. This inflammation was announced, 1st, by greater or less redness of this internal surface ; 2nd, by a well-marked tumefaction of the parts of the internal membrane constituting the different valves of the auriculo-ventricular and arterial orifices ; 3rd, by the facility with which we sometimes removed, in large shreds, this same inner membrane within the cavities of the heart ; 4th, in some cases by a remarkable softening, an extreme friability in the fleshy substance itself, which was very red and gorged with blood, and which then participated in the inflammation of the internal membrane.

Of these different characters of inflammation, the first only can be disputed. We have elsewhere assigned the motives which incline us to consider as inflammatory a considerable number of red or brown colourings on the interior of the heart and its vessels. We shall only add here, as an additional motive for conviction on this matter, that on horses who were opened immediately after they were killed, we have found, either on the inner surface of the heart, or in the arteries, or in the veins, the same shades of colouring, as we have referred in man to an inflammatory state ; now, in this case, cadaveric imbibition could not have acted any part. Let us add also, that more than once, in man, we have found the aorta red only around ulcerations, that is, in those parts where a process of inflammation could be no longer called in question.

Acute inflammation of the inner surface of the heart and vessels appears then to be the cause, to which we may refer, at least in a certain number of cases, the symptoms above mentioned. Now, these symptoms are precisely those which develop themselves in certain individuals at the commencement of the organic affection of the heart ; we are right then in inferring what might be admitted *a priori*, namely, that under the influence of internal carditis, the fleshy substance, consecutively or simultaneously irritated, may be hypertrophied, just as the muscular tunic of the stomach is thickened after a gastritis. But this hypertrophy of the heart depends not only on the irritation communicated to its fleshy substance by the inflammation of its inner membrane : if this latter inflammation pass to the chronic state, the membrane which is the seat of it becomes thicker, there particularly where it is doubled to constitute the valves of the different orifices of the heart ; for it is a sort of law in pathology, that the circumference of the orifices of communication in the different cavities of the body is struck by chronic irritation with more intensity than the other parts of these cavities. In this case may be enumerated the pylorus, the point of junction of the ileum and cæcum, the neck of the bladder, &c. Not only does this membrane become thickened, but it also becomes the seat of vegetations, and various degenerescences. The portions of fibrous tissue which it covers are also thickened ; and there, as in every part where it is attacked with inflammation, this tissue evinces a tendency to pass to the cartilaginous or bony state, These different changes have the common effect of contracting the different orifices of the heart, of opposing the free action of the valves, and consequently of impeding the circulation of the blood ; thence a greater effort is made by the muscular fasciculi of the heart, and from this excess of action, a more active nutrition and hypertrophy.

The inflammation of the inner membrane of the heart may, like every inflammation, assume from its commencement a chronic course ; then the time it commences is most frequently not appreciable by us, and it manifests its existence only by the hypertrophy of the heart to which it gives rise. But the different course of a disease does not change its nature : whether then the different changes of the inner membrane of the heart be preceded in their formation by manifest symptoms of inflammation, or whether the latter remain latent, it seems to us that their cause and primary origin should not be considered as different. Thus two pleuritic effusions are not considered to be of a different nature, because the one was preceded or accompanied by pain, dyspnœa and fever, whilst the other was constantly free from pain, and caused no perceptible disturbance in the respiration and circulation. Thus a very acute gastritis, caused by corrosive poisons, and that which is produced slowly by the daily abuse of alcoholic liquors, are attended to be sure with different symptoms, and still are the same disease.

If, besides, leaving out the examination of the symptoms, we only have recourse to the mere anatomical inspection, we shall still find proofs in favour of our opinion. The contraction of the different orifices of the heart is often caused by the presence of fungous growths on the valves, of vegetations red or grey, hard or soft, with a perfect resemblance to those produced in other organs by an inflammatory process, which in the latter is no longer to be disputed. At the same time that cartilaginous or bony productions exist beneath the membrane which forms the valves, the membrane itself is often red, livid, friable and swollen ; at the same time also several points on the rest of the membrane are sometimes perceptibly thickened, whence there are found white patches or spots scattered over the inner surface of the cavities of the heart ; at other times, though very rarely, it is traversed by ulcerations variable in form and size. In one woman among others, whose aortic valves were, as it were, surmounted by a fungoid tumour, similar, in its mamillated structure, to certain syphilitic vegetations on the verge of the anus, commonly designated by the name of *frambesiæ*, several of the carneæ columnæ of the left ventricle were traversed by small rounded ulcers, the bottom of which exhibited the fleshy substance red and softened. Here the softening was confined to the surface of the bottom of the ulcer ; at other times we have seen it more deeply seated, seize the entire substance of the wall, but only to an extent limited by that of the ulceration of the inner membrane. This softening was such in one case, that slight pressure made by the finger allowed the latter to pass quite through the wall. We have no doubt but it is consecutively to such a softening, connected itself with an internal ulceration, that certain ruptures of the heart take place. Who does not see a perfect analogy between this kind of perforation, and that of which other musculo-membranous walls are also the seat?

Thus then, a considerable number of contractions of the different orifices of the heart, produced either by vegetations which cover the membrane, or by cartilaginous or bony concretions which raise it, recognise as their commencement an acute or chronic inflammation of the membrane lining the cavities of the heart.

This inflammation appears to be the primary cause of several aneurisms of the heart, either by merely determining an irritation in the substance of this organ, or by producing contractions of the orifices, or altering the texture of the valves so as to obstruct their movements.

10. In certain cases of aneurism of the heart, its orifices are found free, and no trace of either an ancient or recent inflammation is to be found on the inner surface of its different cavities, nor in its external covering. But the aorta is more or less seriously altered ; its internal surface has lost the whiteness and polish which characterise its healthy state ; it presents different shades of red colouring, under the form of irregular patches or bands. The most varied products are found between the middle and internal membrane, raise the latter more or less, and oftentimes destroy it. Among these products, there is found genuine pus, either in a liquid state, or more or less concrete, constituting small abscesses beneath the internal tunic. Instead of these purulent products, there are frequently observed depositions of a cretaceous earthy substance, which becomes more and more solidified, and acquires the consistence of a bony concretion ; in other points there are formed cartilages more or less perfect ; at other times there are real vegetations, species of fungus, which sometimes present several of the characters of encephaloid tissue. The existence of one or other of these changes coincides very often with numerous ulcerations, which, commencing on the internal membrane,

extend more or less to the subjacent membranes, which form their bottom. Here, as in the heart, the inflammation of the inner membrane seldom leaves intact the subjacent fibrous membrane which corresponds to the muscular tissue of the heart; sometimes this membrane becomes soft, and very friable; it loses the elasticity which constitutes its characteristic property; sometimes, like the muscular substance of the heart, it becomes considerably hypertrophied, and at the same time the cavity of the artery oftentimes increases in calibre. Now the very frequent coincidence of these different alterations of the aorta, with different degrees of hypertrophy of the heart, seems to indicate that the one contributes to the production of the other.

From these facts we think we may draw the following conclusions: 1st. A great number of contractions of the different orifices of the heart recognise for their commencement an acute or chronic inflammation of the membrane lining the cavities of this organ.

2nd. This inflammation is the origin, and primary cause of several aneurisms of the heart.

3rd. A great number of cartilaginous and bony productions of the aorta, several of the changes which its middle membrane undergoes, either in its texture, or in its properties, are the result of an arteritis.

4th. These different lesions of the aorta seem to have a considerable share in the production of aneurisms of the heart.

11. Here we entreat the reader not to extend our opinion beyond the limits within which we ourselves circumscribe it. We have just stated that an inflammatory process is the frequent cause of the ossifications of the internal membrane of the heart and arteries: this opinion, already avowed by authors of distinction, might still find an additional demonstration in the analogy of that which takes place in other organs, where a process unquestionably of an inflammatory nature often precedes accidental ossification. But we have not said that such was the case with all ossifications; we think, that in old age, the process of nutrition of several fibrous or cartilaginous tissues may be so modified, that without any increase of sanguineous congestion these tissues become hard and ossified; and just as by the sole progress of age, the cartilages of the ribs and larynx pass into the osseous state, in the same manner, and without any process of irritation, depositions of phosphate of lime may take place in the interior of the heart and arteries. Still further, in old persons, the calcareous phosphate may be deposited very abundantly around the orifices of the heart and in the aorta, often without the appearance of any of the symptoms which ordinarily characterise organic affections of the heart. Among other cases, we found in a woman, seventy-three years of age, the aortic valves so surrounded with calcareous phosphate, that, being rendered immoveable, two of them could no longer be lowered, the consequence of which was extreme contraction of the aortic orifice. Other incrustations were found at the base of the mitral valve. There was considerable hypertrophy of the parietes of the left ventricle of the heart, with dilatation of its cavity. This woman's pulse was remarkably irregular. The respiration had never been perceptibly embarrassed; she never had the least appearance of dropsy. It seems that in individuals advanced in years, the greater slowness of the circulation, and perhaps the less quantity of blood, render the obstacles, which in the heart impede the free exit of the blood, less injurious. This, at least, is certain, that several old persons present, for many years, a very irregular pulse, without having either dyspnœa or dropsy. However, in the greater number of them, there arrives a period when the breathing becomes impeded, their legs become infiltrated, and they die dropsical. Do these phenomena supervene merely by reason of the progress of the ossification of the orifices, or do they not frequently occur because the heart, continually losing its energy, is no longer able

to contract with sufficient strength, so as to overcome the obstacle which impedes the free exit of blood? Thence arises a stagnation of the latter in the cavities of the heart, and consequently dyspnœa and anasarca.

Will it be objected to this latter opinion, that this heart, to which we deny sufficient strength to propel the blood, is however hypertrophied? But the size of a muscle is not the sole condition of its energy. If this mode of viewing the subject be exact, it must modify considerably the treatment of diseases of the heart in old people; blood-letting, in several cases, should not be resorted to but with the greatest caution, and merely as a mechanical means for disgorging the vascular system; but if too copious, or too often repeated, it might become extremely injurious, whilst a stimulant plan of treatment, whether internally, or in particular externally, might be attended with advantage.

But vascular ossifications are not confined to old persons only; we have very often met them from the age of forty to sixty: several times we have also observed them in persons from the age of twenty-five to forty; and once, we ascertained the existence of a very remarkable state of ossification in the heart of an individual, who was not eighteen years old when he died: in this young patient, the heart was at least three times the size of the individual's fist. Intimate cellular adhesions united the two folds of the pericardium merely to the extent of the ventricles. The parietes of the left ventricle were very much hypertrophied, and its cavity prodigiously dilated; the parietes of the left auricle were also manifestly thickened. Two of the aortic valves were ossified at their base. From the auricular surface of the mitral valve, there arose a hard, unequal, mamillated tumour, formed by the union of several calcareous concretions, some of which were no longer covered by any membrane. Projecting from three to four lines above the surface of the valve, this tumour occupied about the third of its extent in breadth, extended from the origin of the tendons to the base of the valve, and penetrated from four to five lines into the very substance of the heart. A little lower, in the substance of the septum of the ventricles, there was found another concretion, totally isolated from the preceding, about the size of a large nut. The aorta was exempt from all change, as well as the right side of the heart.

Many of the vegetations, which cover the valves of the heart, may again have an origin different from those which have been just noticed; in some cases they are really formed by coagulated blood, which adheres more or less closely to the membrane on which it lies. These clots of blood present themselves as small tumours of an irregular form; their colour varies according to the mixture, or more or less complete separation of the fibrine and colouring matter of the blood; they oftentimes entirely resemble old clots of blood which obstruct the veins, and which also, in general, adhere closely to the parietes of the latter. We would be almost inclined to believe that in some cases these clots of blood, this species of polypus, put on the characters of a real organisation, and ultimately become united to the membrane, which at first they only covered, by means of a vascular communication. In these clots of blood, in fact, are found the same elements which, in a false membrane, become an organised tissue. At all events, they may acquire sufficient size considerably to narrow the orifice around which they exist; this is sometimes the only obstacle which we have met to the aortic orifice, in hearts in which the parietes of the left ventricle were hypertrophied. Thus then, during life, sanguineous concretions may be formed in the very centre of the circulation, just as they are formed in the different veins, where they may also assume different degrees of organisation.

The existence of these concretions being ascertained, it may be asked what are the causes which favour their formation? Must we seek them in the mode of the heart's contraction, or else in some particular constitution of the blood itself, which, in certain states of the system, has a remarkable tendency to coagulate, whilst, at other times, it tends on the contrary to remain liquid? There are some cases, where the blood which escapes from the opening of a vein, for example, assumes the form of a coagulum so rapidly, that it is seen to become solidified on the very edges of the orifice in the opened vein, whence arises an obstacle to the exit of the blood. At other times, on the contrary, all things else being equal, we in vain make pressure on the opening of the vein ; the blood does not coagulate, it continues to flow, and it is then sometimes difficult to stop the bleeding. These facts being known and appreciated, it would remain to inquire, whether therapeutics can furnish us with means calculated to increase or diminish the tendency of the blood to coagulate.

12. The different organic alterations which we have now passed in review, are not the only ones which precede aneurism of the heart, and which may be considered as favouring its production. The two arterial vessels into which the heart sends the blood, the orifices of communication of these arteries and the heart may be narrower than in the normal state, without there being at the same time any alteration of texture. Sometimes this unusual narrowness is congenital ; sometimes it is acquired, and this latter case occurs if the aorta, for instance, is not developed in proportion to the heart. We have twice seen the ventricular orifice of the aorta so contracted that the little finger could not be introduced into it ; immediately above the artery exhibited its natural calibre. This narrowing was not occasioned by any accidental production, by any appreciable thickening of the different tissues which constitute the circumference of the aortic orifice. The four cavities of the heart were considerably dilated, and the parietes of the two ventricles hypertrophied. Of the two individuals in whom the alteration just described was found, the one had not given us sufficient information regarding the commencement of his disease ; but the other, who was not yet thirty years of age when he died, told us that from his earliest infancy his breathing had been habitually short, and that since he was ten years old he was subject to frequent palpitations, which at the time of puberty became so violent, that they were often accompanied with complete loss of consciousness. It seems, then, that in this patient the extraordinary narrowness of the aortic orifice of the left ventricle was a congenital defect of formation, which produced gradually, and in a way altogether mechanical, the hypertrophy of the parietes of the heart, and the enlargement of the cavities. Here, besides, the obstacle existed only on the left, and yet the right side of the heart participated equally in the disease.

In three other individuals the aorta was very narrow through its entire extent, and the heart presented nearly the same kind of alteration as in the two other patients, in whom the aortic orifice alone was narrowed. The first of these three individuals was fifty years of age when we first saw him. All his life, he told us, his breathing had been short, and whenever he ascended a height, or walked a little quick, he felt violent palpitations. However, up to the age of about forty years, he enjoyed good health : the *slight asthma* with which he was affected, did not prevent him from attending to his business ; but whatever tended to accelerate the circulation, and particularly the use of alcoholic liquors, considerably increased the difficulty of breathing, and renewed the palpitations. About the age of forty-two this man was seized, without any known cause, with an acute pain in the precordial region, with great dyspnœa and fever. He then took to bed for the first time, and was bled. The pain was but of short duration ; the dyspnœa was diminished ; but dating from this period, this man continued an invalid : the difficulty of breathing increased gradually ; the lower extremities became œdematous, and twelve years after he died of an organic affection of the heart, announced by the aggregate of the symptoms which usually characterise this affection. At the autopsy, there was—1st, the pericardium adhering to the heart through its entire extent ; 2nd, considerable dilatation of the two ventricles, with some hypertrophy of their parietes ; 3rd, a very remarkable narrowing of the aorta through its entire extent. The extremity of the index finger could scarcely be introduced through the orifice of communication between the heart and artery; through all its thoracic portion, this same artery had not the ordinary calibre which it presents immediately above its bifurcation at the lower part of the lumbar column. From its passage through the diaphragm to the origin of the renal arteries, it scarcely equalled the ordinary size of the primitive carotid, and from the latter point to its bifurcation it was smaller than the iliacs usually are.

The different symptoms successively presented by this individual, and the progress of his disease, may be very well explained by the nature of the lesions: he had experienced dyspnœa and palpitations from his infancy; this was accounted for by the smallness in the calibre of the aorta, which here again seems to be congenital. However, well-marked symptoms of aneurism of the heart did not present themselves till after his forty-second year, that is, after the appearance of a group of symptoms, which depended very probably on the attack of a pericarditis, traces of which were found after death. This latter inflammation seemed to be the occasional cause of the more rapid development of the aneurism in an individual already disposed to it by the organic conditions of his aorta.

Another patient, twenty-two years of age, had been employed from the age of twelve years in drawing water from a very deep well several times a day. From this time he began to experience palpitations and great shortness of breath. However, for some years after he continued at his very laborious occupation. The oppression and palpitations became more and more violent, and obliged him at last to suspend his labours on December 26, 1821. He then began to cough. On the 28th, he entered the Hôtel-Dieu, and was bled there several times. He left it the 11th of January, 1822, his breathing being easier, and the cough still continuing. On returning home he felt cold. In the night the dyspnœa and palpitations reappeared worse than ever. The next day, January 12, his legs and hands were œdematous. When we examined him, January 30, he presented the following state:—

Orthopnœa; speech panting; face puffed; lips violet-coloured; lower extremities, abdominal parietes, and hands œdematous. The beats of the heart are heard to be hurried, and with impulsion in the precordial region; they are also heard under the right clavicle. Pulse frequent, full, and regular; heat of skin natural. On the following days the dropsy increased, as did also the dyspnœa; extreme anxiety; pain in the region of the heart. He died on the 4th of February.

Post mortem. The heart was three times its natural size. The parietes of the two ventricles were very much thickened, and their capacity enlarged; the left might contain a pullet's egg. The interior of the heart and large vessels retained their usual colour; the origin of the aorta, which was very narrow, could scarcely admit the extremity of the index finger; it was dilated a little towards its arch, then became again contracted so as scarcely to be six lines in breadth. Towards its bifurcation, the end of the little finger could not be introduced into it. The primitive iliacs were about the size of the femoral artery at its termination. A copious quantity of lemon-coloured serum was found in the heart, in the two pleuræ, and in the peritonæum. Even the parietes of the gall-bladder were infiltrated. Sanguineous engorgement of the liver; venous injection of the small intestine.

Two causes seem here to have concurred in the production of the aneurism of the heart: the one, internal and congenital, consisted in the narrowness of the aorta; but this cause would probably have acted but very slowly, if from the infancy of the individual an external cause had not been added. The violent exertions to which this person had been subjected from the time he was twelve years old, would probably not have had an injurious influence on any other individual, but in him there was an organic cause predisposing to aneurism of the heart; this cause must have made its effects be felt in consequence of the habitual acceleration of the circulatory movement.

We merely witnessed the post mortem examination of the body of a third individual, in whom there was also coincidence between extreme narrowness of the aorta in its entire extent, and a double hypertrophy of the ventricles of the heart, with dilatation of their cavities. But there was here an anatomical circumstance worthy of attention: the parietes of the descending thoracic portion of the aorta and of its abdominal portion were become so thin as to be transparent; one might have readily taken them for the parietes of the vena cava; they presented, however, considerable resistance when an attempt was made to rupture them. Dissection informed us that this remarkable thinning of the parietes of the aorta was owing to a real atrophy of the fibrous tunic, which seemed to be in a great measure replaced by a dense cellular tissue, similar to that which is found in the substance of the parietes of the veins, where the longitudinal fibres of their middle tunic are not well-marked. Thus, then, in this case, the defect of development of the artery manifested itself not only by the smallness of its calibre, but also by a great diminution in the thickness of its parietes. The subject of this case was a female of about thirty years of age.

As well as the aorta, the pulmonary artery also may present considerable narrowing, and this too may coincide with an aneurism of the heart. We rest the possibility of it only on a single fact, and here again we can give only the details of the post mortem examination. The size of the heart was very considerable; this size depended principally on the hypertrophy of the two ventricles, the parietes of which were very much thickened; the auricle also presented evident hypertrophy of its parietes; when cut into it did not collapse. There was nothing remarkable either towards the different orifices of the heart or in the aorta. But the pulmonary artery was very small; its trunk scarcely exceeded in size that of the primitive carotid; its two divisions were still proportionally smaller. The subject of this case died in the wards of M. Lerminier, during the March of 1820; he was twenty-seven years of age. This man died a little after his admission, so that we had not time to collect from him any information regarding his previous history. During his short sojourn, he presented all the usual symptoms of organic disease of the heart.

In considering the state of the heart in phthisical patients, we shall see how far an induration of the pulmonary parenchyma, by impeding the circulation through the lung, may produce an aneurism of the heart.

Whether the obstacle to the free course of the blood exists in the narrowed aorta, in the trunk of the pulmonary artery, which also may be narrower than natural, or in the vessels within the lung, which may be obstructed or obliterated, it must not be forgotten, that under the influence of these different causes, both palpitations and dyspnœa may be for a long time manifested, without there being as yet any material change in the thickness of the parietes of the heart or in the calibre of its cavities; but there is a continual tendency to the production of this change, and as we have already seen all the moral or physical causes which produce any disturbance in the circulation, accelerate very much the production of aneurism. Thus, during the absence of the palpitations, the application of the hand or the ear to the precordial region will discover nothing unusual in the heart as long as there will yet be no aneurism; the pulse too will be natural. A woman, forty-five years of age, had been somewhat affected with shortness of breath all her life; she lost breath when she went up a height, or when she ran. Any mental emotion, anything capable of accelerating the circulation in her, produced dyspnœa. However, this woman attained her thirty-ninth year without this dyspnœa being so great as to be considered by her a state of disease. But dating from the summer of 1825, violent palpitations, oftentimes accompanied with fainting, began to be experienced; the dyspnœa became much more considerable; from time to time this woman felt acute pains in the precordial region; at other times it was, as it were, an icy coldness she felt in this same region. In the October of 1825, she entered the La Charité; she had wasted away very much for the last few months; nothing indicated a lesion of the different parts of the respiratory organs. On the other hand, except at the time of the palpitations, the heart, when examined with the stethoscope, seemed to be in its natural state in every respect; the pulse was small but regular, and free from frequency, no trace of dropsy had as yet manifested itself. What was the cause, in this woman, of the palpitations, and particularly of the dyspnœa, to which she was subject from her infancy? Everything inclined us to admit an affection of the heart; but, except at the time of the palpitations, this affection gave no local sign. From this group of facts, we suspected in this patient the existence of congenital narrowness of the aorta; she seemed to have arrived at the period when an alteration was commencing in the nutrition of the heart, an alteration probably consecutive on the defect of conformation of the aorta.

13. In fine, we are come to the case where, in order to explain the precursor of aneurisms of the heart and the mechanism of their production, we no longer find either the acute or chronic inflammatory state, either of the pericardium or of the internal membrane of the heart, neither arteritis, nor the existence of vegetations, nor of incrustations at the circumference of the orifices, neither congenital narrowness, either of the different orifices of the heart, or of the arteries which arise from it (the aorta and pulmonary artery), nor unusual enlargement of these same arteries, nor, in fine, obstruction of the pulmonary circulation. No doubt, without the existence of any of these causes, the different cavities of the heart are seen occasionally to become dilated or narrowed, their parietes become hypertrophied or thinned. These different changes in the texture of the heart can only be explained by a derangement in the normal state of its nutrition. This derangement may be almost congenital; at least it may be dated from the commencement of infancy. Thus a man, fifty years of age, told us that he had been affected with a shortness of breathing since he was from eight to ten years of age; at twenty-nine and thirty-nine he was attacked with anasarca; however, except at these two periods, he always enjoyed good health, and it was towards his forty-ninth year that the disease of the heart, then probably making more rapid progress, the dyspnœa became more intense, and the dropsy reappeared. When first we saw him, this person presented the characteristic signs of hypertrophy of the ventricles with dilatation of their cavities. On examining the body after death, we found the heart very large, and we ascertained the existence of the species of lesion which had been indicated during life, but the different orifices of the heart were free from all obstruction; the aorta presented no deviation from its normal state; the lungs were sound.

14. The symptoms which we have seen in this article, to constitute what might be called the precursor of the organic affections of the heart, may disappear, after having caused the present or approaching existence of an aneurism to be dreaded for several years. These symptoms are palpitations, more or less frequent, and a greater or less difficulty of breathing. What is there astonishing in that, as we have seen that these symptoms oftentimes exist before there was yet any real organic disease of the heart? Thus, they may be produced, first, by an inflammation of the pericardium, or of the internal membrane of the heart, which, after having lasted a shorter or longer time, will terminate favourably, without the sympathic irritation made on the heart having been violent enough to continue after it, and to modify its nutrition; secondly, by a plethoric state, under the influence of which more blood being formed in the system, and consequently a greater quantity passing through the heart in a given time, there is produced an excess of action in the latter, and thence palpitations, which disappear with the

plethoric state, though the continuance of the latter, by prolonging the excess of the heart's action, may ultimately produce its hypertrophy, in the same way as a muscle increases in thickness under the influence of violent exercise; thirdly, these symptoms may again be occasioned by a vitiated disposition of the nervous influence, which may cause the heart to beat with force or irregularity; just as it produces vomiting, or just as it excites the most disorderly movements in the muscles of relative life.

The palpitations called nervous may manifest themselves in conditions of the system differing most widely from each other. Thus they are one of the symptoms of the hysterical affection; they occasionally appear on a sudden in consequence of some strong mental emotion; we have seen the cases of three individuals, who had never presented the least sign of disease of the heart, up to the moment when some strong impression happened to act on them: from this moment they were seized with very painful palpitations, which no longer ceased, and at the end of a certain time we discovered in these persons the existence of hypertrophy of the heart. Thus, in this case, the entire disease consisted at first in a disturbance of the nervous system, and this lesion of the innervation was gradually changed into a lesion of nutrition.

Again, palpitations are often observed in chlorotic girls; and that is even one of the cases in which these palpitations may most easily impose on one for the symptom of an organic affection of the heart. The patients have an extraordinary dyspnœa, which increases the moment they ascend a height; under the influence of the least exertion their hearts beat with violence, and by means of auscultation the pulsations of this organ are heard to a great extent; sometimes, even, it repels the ear rather forcibly, and each of its beats is accompanied by a well-marked bruit de soufflet. The diagnosis is then so much the more difficult as the countenance of the patient presents that paleness and puffing, which mark, at their commencement, many organic affections of the heart. However, after these symptoms have lasted a longer or shorter time, they are observed to disappear, and some patients, who were considered as doomed to die of aneurism of the heart, have been restored to perfect health. The preparations of iron, and particularly the subcarbonate of iron, in large doses, succeed very well in such cases, and by successfully combating chlorosis, this mode of treatment has removed the beating of the heart, and the dyspnœa, which are but some of its symptoms.

CHAPTER II.

LESIONS OF ORGANS, OR OF FUNCTIONS RESULTING FROM THE DISTURBANCE WHICH THE ARTERIAL CIRCULATION UNDERGOES IN CASES OF DISEASE OF THE HEART.

15. These lesions may exist, 1st, in the large arteries, whence result divers modifications of the pulse; 2nd, in the arterial capillaries, whence may result simple active sanguineous congestions, or even hemorrhages.

The pulse presents so many varieties in diseases of the heart, that only a secondary importance can be attached to it for the diagnosis of these diseases.

There are, first, a great many cases in which the heart being seriously affected, the pulse does not deviate in any respect from its normal state. This is what almost always happens when the right cavities of the heart alone are affected, and often, also, when the left side is affected. Thus, then, as a general principle, it must not be concluded from the pulse retaining its physiological character, that the heart is exempt from change.

The lesions of the pulse, in cases of diseases of the heart, may regard its rhythm, its strength, or its frequency.

It has been said that the irregularity of the pulse indicated the existence of an obstacle at the aortic orifice of the left ventricle. Observation is far from always verifying this assertion : on the one hand, in individuals whose pulse had presented during life the greatest irregularities with respect to the strength of the beats, and their mode of succession, the autopsy showed the existence of no obstacle at the auriculo-ventricular or arterial orifice on the left side of the heart; and, on the other hand, we have more than once observed a very regular pulse in cases where, after death, we found at the ventriculo-aortic orifice ossifications, vegetations, or other obstacles. We have ascertained this irregularity of the pulse without any obstacle to which it could be referred, with the existence of the following lesions :—

1st. Simple hypertrophy of the left ventricle, with diminution of its cavity.

2nd. Hypertrophy of this same ventricle, with dilatation of its cavity.

3rd. Hypertrophy of the two ventricles, with or without dilatation of their cavities.

4th. Simple increase in the size of the right cavities, the left side of the heart being intact.

When the irregularity of the pulse is not produced by an obstacle to the free discharge of the blood into the aorta, it is scarcely apparent, except when the disease of the heart becomes exasperated, when, under the influence of causes more or less appreciable, the dyspnœa becomes more considerable, and dropsy is produced or increased. On the cessation of this exasperation the pulsations of the artery resume their regularity.

If, on the contrary, there exists an obstacle, the pulse oftentimes becomes irregular, long before any other sign of heart disease manifests itself; this happens principally in aged persons. In such cases it is not till several years after the pulse has begun to present striking irregularities, either in the strength or in the intervals of the beats, that the respiration begins to be embarrassed, the first traces of serous congestion appear, &c. It is very probable that in cases of this kind the cause of the irregularity of the pulse resides in ossifications of the aortic orifice, which may exist for a long time without disturbing the pulmonary circulation, and consequently without producing dyspnœa ; but this irregularity of the pulse should not cause the less dread of the future development of other symptoms of diseases of the heart.

Sometimes it happens that every time the arterial beats are counted, they are found to be very regular ; but then they may present another species of irregularity, which it is important to know. If we count at different periods of the same day, and even only at the interval of some minutes, we find the greatest variations in their frequency. Thus, for instance, in an individual affected with hypertrophy of the two ventricles, with dilatation of their cavities, in whom the orifices of the heart were free, but whose aorta was traversed with numerous patches, we counted one day one hundred and twenty one arterial pulsations in the minute ; three or four minutes after we found but sixty, and a little after eighty-three. On the following day we counted in the space of some minutes thirty-seven, fifty, forty-two, fifty, then ninety-six pulsations. In another patient who laboured under great dyspnœa, and was delirious, the pulse when first tried gave but thirty pulsations in a minute, a little after having given sixty-eight.

At other times it is only from one day to another, that, without any known cause, without increase or diminution in the other symptoms of disease of the heart, the pulse presents the greatest irregularities in its frequency. Here is a striking instance of it.

A boy, sixteen years of age, experienced some dyspnœa for several months. The face was livid and puffed, the lips violet-coloured. The beats of the heart repelled the cylinder at the precordial region ; they were heard very loud all along the sternum, under the two clavicles, and more feebly on the left posteriorly. Pulse very weak, and in this respect it presented a striking disagreement with the beats of the heart. A few days after this patient's admission, seventy-two arterial pulsations were counted ; three days after, 20th of December, sixty-two ; 21st, forty-four ; the 22nd, the same ; on the 23rd, the pulse, which was so slow the two preceding days, again became accelerated (eighty). On the 24th, without any change in the state of the patient, the pulse lowered to forty-two. On the 25th it was fifty ; the 26th, sixty-nine. Up to the first of January nearly the same number ; from the 1st to the 3rd of January the pulse was but from forty to forty-five.

These great variations in the frequency of the pulse from one day to the other, must be taken into consideration, when we wish to appreciate the effects of certain medicines, and in particular of digitalis. Effects on the pulse have been often attributed to this latter substance, either with respect to lowering or accelerating it, which were altogether independent of it. However, we have satisfied ourselves, that in some cases the lowering of the pulse was the result of the administration of digitalis. In fact, on suspending the use of this substance, the pulse resumed greater frequency ; when it was prescribed anew, the pulse was again lowered. We have seen under the well-marked influence of digitalis the arterial beats come down in some days from ninety to fifty, and even forty. In an individual whose pulse was seventy-two, when he began to take digitalis, the beats of the artery were from the following day reduced to fifty-eight per minute ; they came down successively to fifty, forty-eight, forty-three, forty, thirty-six, and at last to thirty-two. We thought we remarked that the powder of digitalis, given in the form of pill, exercised a more striking influence on the pulse than the ethereal tincture, This influence varies also according to two principal circumstances : 1st, the nature of the disease of the heart ; 2nd, the state of the digestive organs.

The result of our observation is, that if digitalis be given in cases of hypertrophy of the parietes of the heart, and when there is still considerable general reaction, the lowering which it produces in the arterial circulation coincides with a perceptible diminution of the dyspnœa, and the other symptoms. In other cases, on the contrary, there was dilatation of the right cavities of the heart, with thinness of their parietes ; where the general weakness was carried to a considerable degree, we think we found that at the same time the pulse became slower under the influence of digitalis, the dropsy increased, the dyspnœa was far from diminishing, and the patient seemed to become weaker, and to sink faster.

Digitalis lowers the pulse only so long as it does not irritate the stomach. We have seen a case, where the ethereal tincture of digitalis first produced a very sensible diminution in the frequency of the arterial pulsations. The dose was rapidly raised up to eighty drops in the twenty-four hours, in a five-ounce mixture, without any morbid phenomenon appearing with respect to the stomach ; up to that time the pulse had become every day slower and slower. In the dose of ninety drops, a slight pain was felt in the epigastrium ; the pulse became a little accelerated ; on the dose of one hundred drops vomiting was produced, and at the same time the pulse became extremely frequent. The use of the digitalis was suspended, and the gastric symptoms disappeared ; but the pulse remained for some time very much accelerated. We shall again return to this subject.

In certain cases where the blood circulates but with great difficulty in the different cavities of the heart, and where it experiences at the same time greater or less obstruction in its passage into the aorta, the arterial beats may be much rarer than those of the heart. One of the most remarkable cases of this kind which we met, was the following :—

A groom, forty-six years of age, experienced some dyspnœa for the last two years : his legs were swelled several times. When he entered the hospital, the symptoms were, orthopnœa, extreme anxiety, countenance violet-coloured, ascites and anasarca, distressing cough. The beats of the heart were irregular in their rhythm; they were heard over a very small extent with a strong impulsion. The hand applied over the precordial region, felt but an obscure bruissement. The pulse, which was extremely small, *was felt but at long intervals.* Eight or ten contractions of the ventricle were frequently heard without its being perceptible ; then we sometimes felt one, sometimes two or three arterial pulsations in succession. (Frictions with linim. volat. cantharid. ; two blisters to the legs ; oxymel of squill, &c. &c.)

The three or four days following the patient passed the night sitting on the edge of the bed : the asphyxia was extreme, then the respiration became more free, and at the same time the dropsy diminished rapidly. The urine, which till then was scanty, flowed in great abundance. In proportion as the dyspnœa lessened, the pulse became more perceptible ; but it was still very slow compared with the beats of the heart : thus during several successive days, we counted from thirty to forty arterial beats in the minute, and, at the same time, *one hundred and twenty beats of the heart.* During the fifteen days following, most of the symptoms of the disease of the heart gradually disappeared ; the respiration again became free, or at least the patient did not find it more embarrassed ; the countenance resumed its natural appearance ; there was no longer any trace of dropsy. In a few days after the pulse became perceptible at each beat of the heart ; both were in other respects very irregular. The patient soon left the hospital considering himself as completely cured.

This case, which we have cited here in consequence of the phenomena presented by the pulse, presents to us also a striking example of the rapid manner in which the symptoms of an organic affection of the heart may be dissipated, after these symptoms have been so severe as to make the patient seem to be actually dying. We shall again remark, in this case, the signs furnished by auscultation, which seemed to indicate that the affection of the heart existed only on the left side, a circumstance not announced by the other symptoms.

With respect to its strength, the pulse of aneurismatic patients again presents the greatest varieties. First, there are a great many cases in which this pulse is neither stronger nor weaker than in its normal state. And what is remarkable in the matter is this, that there is scarcely one of the numerous organic affections of the heart, in which this natural state of the pulse has not been ascertained, with respect to its strength. Does not this prove that the strength or weakness of the arterial pulsations do not depend merely on the thickness of the parietes of the heart, and the size of its cavities, but also on the greater or less energy of the contractions of this organ, an energy which is far from always being in a direct ratio with the thickness of its parietes ?

The pulse, stronger than usual, which raises itself as a tense cord, is principally met in those cases where, the aortic orifice being free, the parietes of the left ventricle are hypertrophied, without its cavity being perceptibly greater or less than natural.

In the case, on the contrary, where this same left ventricle is hypertrophied, but where at the same time its cavity is very much diminished, the pulse then often presents remarkable smallness. The same thing may occasionally happen also, when the cavity of the left ventricle is considerably dilated.

Considerable narrowing of the aortic orifice is also a frequent cause of smallness of the pulse.

These different cases might be admitted *à priori;* but here is another still more extraordinary; it is that when the heart presenting in all its parts an enormous size (*cor bovinum*), which is owing at the same time to dilatation of the cavities and considerable hypertrophy of the parietes, without there being any obstacle to the aortic orifice, the pulse is not only not stronger, or more vibrating, but even weaker than in the normal state. It is then we often remark a very striking contrast between the beats of the heart, which are energetic, very tumultuous, and appreciable by auscultation in almost all the points of the thorax, and the arterial beats, which are sometimes so weak as not to be perceptible. This extreme smallness of the pulse is sometimes the ordinary state; sometimes it manifests itself only at intervals, when the beats of the heart became more tumultuous, and the dyspnœa increases; then in proportion as these symptoms improve, the pulse recovers a certain degree of strength.

16. When the parietes of the left ventricle, being very much hypertrophied, contract with unusual energy, there may thence result some morbid phenomena more or less serious, which depend on the unusual force with which the blood is driven into the arterial capillaries. This afflux is more particularly felt towards the head, in consequence probably of the structure and arrangement of the arteries which carry the blood to it. Thence flushes of heat mounting to the face, and those frequent attacks of dizziness of which several individuals complain who are affected with hypertrophy of the heart. Frequently these attacks of dizziness develope themselves every time that palpitations are felt. More than once we have seen an active sanguineous congestion, which took place towards the encephalon, produce all the symptoms of an apoplexy, which threatened the patient with speedy death; but these alarming symptoms soon disappeared under the influence of copious bleedings, and it then became evident that there was in the brain only a temporary fulness of the sanguineous capillaries without hemorrhage. But at other times there was real effusion of blood. Thus then, from the state of hypertrophy of the heart, there may result with respect to the brain, 1st, a first degree of congestion, announced merely by pain of head, vertigo, and dizziness; 2nd, a second degree of this same congestion, violent enough to produce a total loss of consciousness, and all the symptoms of cerebral hemorrhage; 3rd, this hemorrhage itself.

CHAPTER III.

LESION OF ORGANS OR OF FUNCTIONS WHICH RESULT FROM THE DISTURBANCE WHICH THE VENOUS CIRCULATION UNDERGOES IN CASES OF DISEASE OF THE HEART.

17. These lesions are: 1st, in the venous trunks near the heart, an unusual reflux of blood, whence results the phenomenon, long known by the name of the venous pulse, and perceptible in the jugulars; 2nd, in the capillaries these lesions are much more considerable: they consist principally, either in different congestions, which, acting on different organs, modify more or less their texture and functions, or in serous effusions, which is the merely mechanical result of an obstacle to the free return of the blood from the different venous radicles towards the heart. We shall say nothing here of the reflux of blood in the large veins, because we could add nothing to what has been published on this subject by different observers: but we shall direct our attention more particularly to the different phenomena which result from the disturbance of the capillary circulation, particularly the different sanguineous or serous congestions.

ARTICLE I.

SANGUINEOUS CONGESTIONS.

18. These congestions may have their seat either in membranes or in the parenchyma of organs. The tegumentary membranes, both internal and external, being abundantly provided with capillary vessels, must be considerably modified with respect to the circulation which takes place in them every time the central organ of this circulation is so changed, that the blood is no longer freely received into its different cavities. Let us now examine in what state, 1st, the skin, 2nd, the mucous membranes, are found in diseases of the heart.

19. The skin presents no other alteration than a greater or less modification in its colour, seldom over its entire surface, more frequently only in some parts of it.

The general colouring of the skin of a well-marked bluish tint appears particularly observable in cases wherein there exists an unnatural communication between the two auricles of the heart. This is what constitutes cyanosis, or the blue disease of ancient authors*.

Independently of this rare case, we often see in individuals affected with aneurism of the heart, and whose respiration is very much embarrassed, the entire skin present a livid tint, such as is observed in persons in a state of asphyxia. This livid tint cannot be considered as a characteristic sign of organic affections of the heart, for it must manifest itself every time that any cause whatever puts an obstacle to the free exercise of respiration. But why is it not found then in phthisical patients, the fourth part of whose pulmonary parenchyma scarcely remains permeable to the air? The reason is, because in them there is at the same time a diminution in the mass of blood, so that the equilibrium is re-established between the quantity of air, which may still penetrate into the pulmonary vesicles, and the quantity of blood to be arterialised. It is seen that such is not the case in individuals affected with an organic disease of the heart; likewise, in the latter, the best means of dispelling the livid colour of the skin is frequently to have recourse to large bleedings, which act in a manner altogether mechanical, by unloading the heart and thereby the pulmonary apparatus.

The partial injection of the skin is observed principally on the face. The colouring thus caused is livid, violet, and evidently produced by an unusual accumulation of venous blood in the capillary system of the face. This venous colouring is sometimes so marked that it actually has a tendency to black.

The injection of the face, when carried to the highest degree, scarcely ever manifests itself except in the latter periods of the disease of the heart. But in a less degree it is often one of the first signs of it; it already begins to manifest itself oftentimes before there is yet any other well-marked symptom. It has often caused us to suspect the existence of a disease of the heart as a complication of different affections of the lung, and particularly of phthisis pulmonalis.

Corvisart said that in consequence of the extreme difficulty of the return of the blood towards the heart, whence resulted venous congestions in different points of the skin and of the cellular tissue subjacent to it, these parts may be attacked with gangrene where these congestions were most intense, or, what comes to the same, where several causes oppose the return of the blood, as, for instance, in the extremities. However, up to the present time, medical men have rather admitted the possibility of such a gangrene than cited examples calculated to demonstrate its existence. It will not then be deemed unnecessary to give some examples of it here. In some we shall find a remarkable tendency of certain cutaneous inflammations, apparently very slight, to terminate in gangrene; in others we shall not be able even to ascertain the existence of any previous inflammation.

---

* Recent observations have shown that a wide communication may exist between the two auricles in adults without cyanosis taking place. On the other hand, the entire periphery of the skin has been seen to present a well-marked bluish tint in cases where the autopsy presented nothing but different organic affections of the heart, without any communication between the auricles.

In the first place, the readiness with which gangrene occurs around scarifications made in infiltrated limbs is generally known; that is certainly one of the strongest objections to this operation, which, on the other hand, often relieves the patient very much, by allowing the serum to escape in proportion as it is formed. Around the part entered by the lancet, we see the skin first become red, then soon become livid, then black, and ultimately become putrid. Here we see two phenomena succeed each other, and we may comprehend their connexion:—1st, under the influence of the irritation caused by the instrument, more blood is driven towards the point of the skin which has been cut; 2nd, the blood accumulates there much more rapidly than it can make its exit, in consequence of the disease of the heart, and from this venous congestion carried to a high degree must result the death of the part. Here then it may be seen that a stimulant treatment can be only injurious, if it continue to increase the afflux of the arterial blood, without at the same time arousing the venous circulation; it would be serviceable, on the contrary, if it produced this latter effect; but how are we to be certain of that?

We have thrice seen a slight erysipelas, which affected the skin of the infiltrated lower extremities, quickly assume a brown colour, which indicated a tendency to gangrene. In one of these three cases, the gangrene actually occurred; it affected a considerable portion of the skin of one of the legs, and the patient died. Besides a general increase in the size of the heart, with dilatation of the cavities, hypertrophy of the parietes of the ventricles, and ossifications at the periphery of the aortic orifice, the autopsy showed that beneath the gangrened skin the cellular tissue was infiltrated with serum, but exempt from all inflammation.

In the two other cases, the erysipelas, after having presented for some days a brown, and even an almost black tint in some parts, gradually recovered a better colour; it again became red, and terminated by resolution. In these two cases, the erysipelas manifested itself amidst a state of considerable dyspnœa, which was effectually combatted by large bleedings. It was only after the latter were employed, and in consequence of the abstraction of blood, the diminution in the embarrassment of the circulation was announced by the diminution of the dyspnœa, that the brown colour of the erysipelas was succeeded by a red tint of a favourable nature. In these two cases it seems evident that a venous congestion gave to the inflamed skin the brown colour which threatened gangrene. How did the blood-letting act here? By unloading the heart of the blood which obstructed it, it allowed an easier return to the venous blood accumulated where the erysipelas existed. In a little time more, this stagnation of blood, peculiarly unfit for the purposes of life, would have brought on the death of the part where it existed. Thus, then, from a mere degree in the intensity or duration of the venous blood, there existed in these two latter cases a simple brown colouring of the inflamed part, and in the first a real gangrene of this same part.

A middle-aged man presented all the symptoms of an organic affection of the heart. The dyspnœa was considerable; there was anasarca, and in particular the scrotum was infiltrated. Suddenly the skin of the bursæ became painful and red, but very quickly this redness passed to a brown, and gangrene made its appearance. A considerable part of the skin of the scrotum fell off in shreds, and abundant suppuration was established around the exposed testicles. For some days the patient's strength declined rapidly, the features became more and more altered, and everything seemed to announce a fatal termination. In this state of things, before and at the commencement of the suppurative process, M. Lerminier ordered the scrotum to be covered with fomentations made of decoction of quinquina; he prescribed tonics internally. A healthy suppuration was established, the strength was recruited, the countenance recovered a more natural appearance; the sore on the scrotum was nearly cicatrised, and at the same time (what by the way was very remarkable, and a circumstance which some attempted to attribute to a salutary revulsion effected by nature), the primary symptoms produced by the disease of the heart underwent very great improvement; the dropsy disappeared, and this man, on whom so unfavourable a prognosis had been made, was on the point of quitting the hospital in a tolerably improved state, when he was suddenly attacked with apoplexy, of which he died.

This is not the only case where we have seen, in individuals affected with organic disease of the heart, the dropsy and dyspnœa to diminish under the influence of stimulant treatment. No doubt also but that in other cases a debilitating treatment produces the same effect. On this point nothing general can be laid down, and the choice of one or other of these methods must be directed far less by the nature of the lesion of the heart, than by other circumstances, such as the state of the patient's strength, the time the dropsy has existed, &c.

In the cases just cited, we have seen either gangrene, or the brown colour which precedes it, affect parts which had been first attacked with an inflammation; one circumstance must here engage our attention in an especial manner—namely, that it was not by the intensity of the preceding inflammation that the gangrene could be explained. Here now is another case in which we shall see a portion of the skin become gangrenous in a patient with aneurism, without any trace of preceding inflammation; but what this latter case will have in common with the preceding is this, that here again the gangrene will seem to be but the extreme degree of a partial stagnation of venous blood.

A middle-aged man, labouring under an organic affection of the heart, became anasarcous, and had great dyspnœa. The entire skin presented a slight livid tint. One day we found this livid colour become very intense on the skin of the inner part of the chest between the two breasts. The following days this colour, which seemed to us to be the simple result of a great injection of the venous capillaries, increased more and more, and at last it became entirely black, and soon extended to the entire neck. The skin appeared gangrenous over all this extent. The patient soon died. The skin of the thorax was found black throughout; beneath it the cellular tissue was gorged with a brownish blood. No fœtid odour was exhaled from it.

20. The mucous membranes present, in aneurismatic patients, lesions more varied and more numerous than those of the skin. From the mere stagnation of venous blood in these membranes, which is altogether mechanical, there results not only a red colouring of their tissue, appreciable after death, but consecutively to this accumulation, there are also seen to arise real alterations of texture and remarkable symptoms. In fine, from the circumstance of the redness of mucous membranes in aneurismatic patients being often the merely physical result of sanguineous stagnation, it must not be thence inferred that in them this redness is not also, in a certain number of cases, the result of a real inflammatory process.

We shall describe, in other parts of this work*, the different degrees of sanguineous congestion altogether mechanical, of which the gastro-intestinal mucous membrane is so frequently the seat. The more we open dead bodies, the more convinced we are that this congestion, in its different varieties, may simulate most of the shades of inflammatory redness; it follows from thence that, in all the cases where death has been preceded by signs of asphyxia, the mere redness of the gastro-intestinal mucous membrane cannot often warrant us in admitting that there really has been inflammation. It is less, probably, from the characters of the redness than from its exact circumscription in some points, that we can establish the existence of inflammation.

---

* See also on this subject, the 2nd vol. of our *Pathological Anatomy.*

But from the circumstance of the intestinal redness in aneurismatic patients being most frequently the mere mechanical result of embarrassment in the venous circulation, it would be a serious error to conclude, that, every time this redness is observed, it recognises a similar cause. Often enough it seems to depend on a real inflammatory process, to which in some cases venous congestion probably predisposes, and which is often produced also in these diseases by the unseasonable exhibition of different stimulating medicines, given for the purpose of exciting perspiration, urine, or stools. It is, perhaps, because sufficient attention has not been paid to the influences, varying according to the individuals, exercised by these medicines on the gastro-intestinal mucous membrane, that persons have at all times been so little agreed as to their mode of action. Thus, there are some individuals in whom a slight dose of castor oil, administered but once, produces considerable gastro-intestinal irritation, which evinces its existence by symptoms variable in their nature and severity, according to the individual dispositions. To other patients, on the contrary, the most drastic purgatives, such as gamboge, aloes, jalap, syrup of buckthorn, may be given with impunity for several days successively. Not only is there no symptom of gastro-intestinal irritation seen to manifest itself after the exhibition of these medicines, but we have even more than once found, in such cases, the intestines pale, and exempt from all appreciable lesion, though for several successive days strong drastic medicines had been carried along the mucous membrane, and these medicines had caused copious stools. From these facts it seems to us, that we should conclude, that in several individuals the irritation produced by purgatives is not to be compared, with respect to its nature and its effects, whether local or general, to a real inflammatory process; it seems that their action is sometimes limited to merely increasing the intensity of the intestinal contraction, sometimes to the producing over the mucous membrane that species of congestion designated by some authors by the name of *secretory irritation*, whence there takes place on the surface of the mucous membrane a more abundant and more active exhalation than usual. We are satisfied that the action of purgatives limited to these effects may be very useful, and is very well indicated in a certain number of morbid states. Instead, then, of proscribing in all cases this class of medicines, because they have been abused, we think it more prudent, and more conformable to physiology, to study their action, to learn their effects, and to demand, not from theory but experience, whether there are cases where they may exercise a salutary influence over the economy when morbidly affected, and what these cases are. It would be going out of our place now to prosecute these researches here; we shall merely state a case, which shows in a very striking manner the good effects which may be produced, in certain cases of dropsy, by the use of purgatives.

A young man who had been troubled from his infancy with scrofulous tumours, had a cough for some months, when he was seized with an acute abdominal pain, which lasted for three or four days, and which was succeeded by a rapid tumefaction of the belly. He entered the La Charité in the month of September, 1822. The abdomen, insensible to pressure, presented an evident fluctuation; the pulse was frequent and small. The mucous membrane of the primæ viæ did not appear affected. M. Lerminier considered the ascites to be owing to a slight peritonitis; leeches were first applied to the anus: on the following days recourse was had to blisters applied to the lower extremities, aromatic frictions, and diuretics. However, the ascites did not diminish. Purgatives were then tried: the patient took a mixture consisting of one ounce of syrup of buckthorn, and two ounces of castor oil; a copious purgation took place.

After several stools composed of excrementitious matters, the patient voided nothing but limpid serum of a slightly yellow tint. Several pints of serum were thus voided by stool in the space of fifty hours; at the end of this time the belly was lessened in size, there was no fluctuation any longer felt; then the diarrhœa lessened, and ceased spontaneously in a few days. Several months after this person died of the increasing progress of the chest disease. Tubercles were found in the lungs. Several of the intestinal convolutions were united together by old cellular adhesions (the peritonitis having been cured). Here and there on the surface of the peritoneum small masses of tuberculous matter were found. The internal surface of the intestines presented no other appreciable lesion except some crude tubercles which were developed in small number beneath the mucous membrane.

We have elsewhere cited a case where, at the same time that a copious exhalation of serum was established on the surface of the bronchi, the absorption of a hydrothorax took place. Here again we see the same coincidence of phenomena, the absorption of serum on one part, a copious exhalation of it on the other, take place in the abdomen. But in the first case every thing was accomplished by the mere efforts of nature; on the contrary, in the case just cited, the fluxion towards the intestinal mucous membrane was, if not produced, at least favoured by the administration of a purgative. It is certain, no doubt, that in many other individuals this medicine had not such an influence, and that it merely gave rise to some evacuations without any result; it is no less certain, that in other cases this same purgative may have even been injurious. But it is in the difficult tact of ascertaining precisely the suitable moment for administering a medicament, that a great part of the practice of medicine consists. Let us not think, then, that we have done every thing, when, after having decided that a disease is a local irritation, we combat it by blood-letting and emollient drinks; for there are cases also, where these means are, as well as purgatives and all other therapeutic agents, either useless, or even injurious.

Among the other medicinal substances most frequently administered in diseases of the heart, digitalis is one of those whose therapeutic effects are least constant; and one of the causes of this inconstancy must certainly be attributed to the influence of digitalis on the stomach, which is variable, of course, according to the individual. Thus, there are some patients who cannot take a few grains of the powder of this plant, or a few drops of the tincture, without vomiting being produced. Every time the digitalis produces in the gastric mucous membrane a certain degree of irritation, its diuretic effects no longer take place, and, far from lowering the motions of the heart, it renders them more frequent. Shall we therefore renounce the employment of digitalis? Certainly not; but in employing it we should never lose sight of the state of the stomach and intestines.

Whatever be the cause under the influence of which the gastro-intestinal inflammation has developed itself, the symptoms to which this inflammation gives rise may be referred to three principal groups.

1st. In a considerable number of cases irritation of the stomach, or of the intestines, is announced only by local symptoms rather obscure; but this irritation reacts sympathetically on the heart, and the symptoms arising from the affection of the latter are very much aggravated. Thus its beats acquire unusual frequency; they become irregular and tumultuous; the difficulty of respiration increases: these symptoms again acquire for a time a higher degree of intensity every time that food is taken into the stomach. Among other instances we saw an individual, in whom the ingestion of simple drinks was immediately followed by dyspnœa, so that lying down became impossible, and for about two hours the person was as it were threatened with asphyxia. At the same time that under the influence of the gastro-intestinal inflammation the local symptoms of heart disease are increased in severity, we also see dropsy, either manifest itself for the first time consecutively to the increase in the disturbance of the venous circulation, or become increased, if it did exist before, or finally reappear, if, after having already existed, it had disappeared. These different symptoms become aggravated as long as the affection of the digestive tube exists, and they amend along with it.

2nd. At other times the gastro-intestinal inflammation does not aggravate in so marked a manner the symptoms of disease of the heart; neither does it announce itself by well-marked local symptoms; but it seems to react chiefly on the nervous system, and produces the symptoms of what is called adynamic fever. We have more than once seen this form of disease appear in individuals labouring under aneurism of the heart, in cases where different stimulating medicines had been introduced into the primæ viæ. We then see the tongue become red and dry, and to assume a brown or black tint; the stools become liquid and copious, without there being either abdominal pain or vomiting; the pulse acquires great frequency, the features soon change, the prostration soon becomes extreme, and death is the frequent termination of this adynamic state. On opening the body, we find in the intestines traces of inflammation, which are often confounded, however, with those left by simple mechanical injection. What is very remarkable is, that frequently at the same time that the adynamic fever, symptomatic of an intestinal affection, shows itself, and in proportion as it acquires greater intensity, the symptoms of the heart affection become less marked; the dyspnœa is not considerable; the serous congestions which exist in different parts of the body diminish, or are even entirely reabsorbed, so that in this case the patients do not die of the disease of the heart. If, therefore, death does not then supervene amidst a state of asphyxia, it follows, that the redness presented by the gastro-intestinal mucous membrane cannot be entirely attributed to the mechanical stagnation of the venous blood, and that is a further reason for admitting that it is the result of an active sanguineous congestion, in fact, of inflammation.

The mere removal of every kind of stimulating treatment is often sufficient to put a stop to the state just now described; under such circumstances the application of leeches to the anus oftentimes produces a good effect.

We have stated, that supervening inflammation in the primæ viæ causes in several persons affected with aneurisms of the heart an apparent adynamic state, which, often produced by the abuse of a stimulating treatment, sometimes becomes quickly fatal, and sometimes disappears, either solely in consequence of suspending the use of stimulant remedies, or under the influence of an antiphlogistic treatment more or less active. But we do not mean to infer from this, that what is called adynamic fever is uniformly, in aneurismatic patients, the result of a gastro-enterite. We think we may say, that in all cases of chronic diseases where an organ has been a long time suffering, as the heart in aneurismatic patients, we often observe the group of symptoms constituting adynamic fever (including in this dryness and blackish state of the tongue) without there being any real gastro-intestinal inflammation. It seems that in cases of this kind the long continued suffering of an organ important to life, modifies, perverts, and seriously alters the two powerful agents, which hold the entire economy under their controul; the blood, on the one hand, whence emanate all the materials which enter into the formation of the organs; and the nervous system, on the other hand, which presides over the due arrangement of these materials, or which, at least, if it does not uniformly concur in the first instance, exercises, in all cases, an undoubted influence over the entire process of nutrition and secretion. Whatever be the explanation which may be given of it, we have more than once found the intestinal canal exempt from all appreciable lesion in persons affected with different chronic diseases unconnected with the digestive apparatus, and who died with the aggregate of symptoms characterising adynamic fever (black incrustation of the tongue, gums, and teeth; pulse weak and frequent; leaden hue of the face, stupor of the countenance, tremors and automatic movements of the muscles, obtuse state of the intelligence, and of the different sensations, &c.). For the last six months, particularly of the year 1825, more than one fact of this kind was observed at the La Charité. Are we to say that the group of the symptoms of what is called adynamic fever has its seat no where? Far are we from entertaining such an idea; since there is disturbance of functions, there must likewise be disturbance of organs. But it is certain that the intestinal canal is not always the seat of these symptoms. Where is this seat? Very probably in the two great systems of which we spoke just now: in the nervous system, in the blood, which are necessarily and irresistibly modified with respect to their functions, their properties, and the proportion and nature of their anatomical and chemical elements, by the chronic disease which affected a part of the organisation *.

This species of adynamic state may be only apparent, as that which is symptomatic of an affection of the primæ viæ, and then it requires nothing more than a mild treatment. But it may also be real, and then the stimulating treatment has been employed with decided advantage. Several times have we seen M. Lerminier administer internally different preparations of bark, and at the same time excite the skin very actively, either by irritating frictions, or by the application of a great number of blisters, in persons labouring under disease of the heart, and who fell into the adynamic state already described. Sometimes this treatment was of no advantage, or even it exasperated the symptoms considerably; but sometimes also we have seen the strength aroused under this treatment, the tongue resume its natural appearance, the cold extremities again become warm, the clearness of the intelligence restored; in a word, life, which was well nigh extinct, again lighted up, without the symptoms of the cardiac disease being at all aggravated.

From all that precedes we shall conclude that the adynamic state which is so frequently observed during the progress of organic affections of the heart, is, in a great number of cases, the result of an inflammation of the primæ viæ; but that sometimes also it is independent of it, and that the treatment useful in one of these cases is not suitable in the other. No doubt such a distinction is not always easily made; but because an object eludes our sight, must we deny its existence? Let us place ourselves in another position, and we shall often discover it.

3d. In fine, there are cases where the irritation of the primæ viæ, in aneurismatic patients, no longer produces the preceding symptoms, but it is principally announced by symptoms purely local. The appearance of the latter often follows the administration of different medicines more or less stimulating; we have already insisted on this point. First, the patients complain of no longer having an appetite; they feel a weight, or even an acute pain in the epigastrium; finally, when the affection of the stomach has become more severe, they are seized with vomiting, which may be very copious and very frequent without the patients saying that they feel any real pain towards the region of the stomach. If these symptoms appeared after the more or less continued use of stimulating medicines, all that is frequently necessary to dispel the symptoms of the gastritis is to suspend the latter.

---

* No doubt, in the cases referred to, these lesions of the blood and of the nervous centres were not discovered in the post mortem examination; but are we therefore to say that they do not exist? More than once, when, during life, a very marked disturbance was observed in the functions of the brain or spinal marrow, these centres, when examined after death, appeared in their normal state. It is, however, certain that in this case they are seriously altered; but their lesion escaped us, and we admit it only by induction. The latter may, unquestionably, in a great number of cases, lead us to results as positive, perhaps even more rigorous than actual and immediate observation. It is in our opinion one of the greatest errors to which the ill-directed study of pathological anatomy can lead us, not to admit any other alteration in the animal economy but those which are discoverable by the scalpel.

In other patients, the stomach is but little altered; but there comes on a diarrhœa, sometimes serous, and free from pain, sometimes attended with abdominal pains; tenesmus and bloody stools also may be observed.

. In these different cases, the tongue is very far from being always a faithful index of the state of the primæ viæ. Thus, on more than one occasion where there was obstinate vomiting with pain in the epigastrium, we have seen the tongue preserve its natural moisture and colour. On the other hand, we already remarked, that the black incrustation of the tongue was not necessarily connected with the degree of intensity of the gastro-intestinal inflammation.

21. The mucous membrane of the air passages, as well as that of the digestive passages, frequently becomes, in aneurismatic patients, the seat of sanguineous congestions. They are observed also whether there be dilatation, or narrowing of the cavities of the heart, whether its parietes be hypertrophied or thinned, whether, in a word, the seat of the disease resides in the right or in the left cavities. In all these cases, in fact, the circulation of the blood in the interior of the heart no longer going on as in the normal state, this fluid must have a tendency to flow back, and stagnate in the pulmonary vessels. It is easy to conceive then that in proportion to the variable intensity of this cause of stagnation, or, of the accumulation of blood in the lung, the congestion produced in this organ must also present a great number of degrees.

The different degrees of pulmonary sanguineous congestion, from whence there are produced, in the bronchial mucous membrane, a great many shades of redness, are indicated during life by different degrees in the difficulty of the respiration. In fact, if more blood than is natural be accumulated in the pulmonary vessels, it is evident that the quantity of air ordinarily introduced into the lungs, will no longer be sufficient to arterialise the entire mass of blood, which is diffused in superabundance over the parietes of the pulmonary vesicles; thence the necessity of the introduction of a greater quantity of air in a given time, and consequently a greater frequency in the inspiratory movements, and a feeling of oppression. So long as the sanguineous congestion is not very considerable, this introduction of an excess of air into the lungs is performed instinctively; the patients do not yet habitually feel any oppression; but it is easily perceived that their speech is already short, and their breathing hurried; if we apply the ear to the thoracic parietes, the respiratory murmur is heard to be performed with unusual strength, an evident proof that the air passages receive a greater quantity of respirable fluid. This anormal intensity of the respiratory murmur, its distinctness being still preserved, is often observed before any other sign has demonstrated the existence of an organic affection of the heart: it does not prove that the latter exists, but it affords a certainty that some cause or other impedes the free passage of the blood through the pulmonary vessels. But if the sanguineous congestion becomes more and more considerable, a period arrives when, notwithstanding the efforts made by the patient to introduce the greatest possible quantity of air into his lungs, the quantity of atmospheric gas which enters as far as the ultimate bronchial ramifications becomes insufficient to duly modify all the blood accumulated in the lungs; on the other hand, the portion of this blood, already arterialised, oftentimes can no longer flow freely into the left cavities of the heart: thence, an additional obstacle to the entrance of the venous blood into the lung, and consequently a reflux and stagnation of this latter: 1st, in the right cavities of the heart; 2nd, in the large venous trunks which enter into it; 3rd, in all the parenchymatous tissues, whence these venous trunks bring the blood towards the heart more or less directly. Then the difficulty of breathing is carried to the highest degree of intensity, the asphyxia is imminent; the patient feels that an unsurmountable obstacle is opposed to the entrance of the air into his lungs; however, this air still enters freely into the vesicles, and the feeling of suffocation arises solely from the quantity of air introduced being no longer proportioned to the mass of blood to be arterialised.

It is in cases of this kind that copious bleedings are often of the greatest service. By means of them we have seen a patient who appeared to be in the last gasp actually restored to life. The extremities had already lost their heat; the eyes were dead, the face livid, the respiration accompanied with a râle, the pulse irregular, intermittent and scarcely perceptible; in a few hours the patient was dying in a state of asphyxia; but scarcely did the blood commence to flow through a large opening in the vein, when the suffocation lessened, the skin lost its livid colour, the extremities again became warm, and the pulse rallied, &c. The cause of the asphyxia in this case being known, it may be readily understood how the sudden abstraction of a great quantity of blood may be attended with such beneficial results. This is a proof, among many others, that the indication of bleeding, in diseases, must be often derived less from the nature of the symptoms which present themselves, than from the knowledge of the lesion on which these symptoms depend.

The dyspnœa often precedes for a long time all the other general signs of diseases of the heart; this particularly happens, when it is connected with hypertrophy of the ventricle, with dilatation or diminution of its cavity, any obstacle whatever to the free passage of the blood existing at the aortic orifice. In the case, on the contrary, where the disease exists primarily in the right cavities of the heart, traces of dropsy are observed to appear before the respiration has become perceptibly embarrassed.

The dyspnœa depending on a simple affection of the left ventricle, may first manifest itself only at intervals; it is observed every time, for instance, that a mental emotion accelerates momentarily the beats of the heart, or after violent or unusual bodily exercise; afterwards it returns more frequently and without an appreciable cause: at a later period, in fine, it becomes continued: there then exists permanent embarrassment in the pulmonary circulation; consecutively to this habitual impediment to the course of the blood, the right cavities of the heart may be dilated, their parietes may become thickened; and thus it may be easily conceived how the disease of the heart, at first limited to the left ventricle, may extend to all the parts of the organ.

In persons of advanced age, there may be hypertrophy of the left ventricle, with greater or less obstruction at the aortic valves, without the breathing undergoing, for a long time, a perceptible embarrassment. (The affection of the heart is otherwise announced in this case, either by the impulsion, which is perceived in the precordial region, or by the intermissions and great irregularity of the pulse.) The preservation of the freedom of breathing in old people depends probably, 1st, on the diminution of the entire mass of blood; 2nd, on the less rapidity of the circulation. However, whether it is that the hypertrophy of the heart continues to increase, or its contraction becomes less energetic, there comes a period, when the breathing commences to be no longer performed with so much freedom; these old people soon become asthmatic, then the lower extremities begin to be infiltrated. Sometimes at the moment when this infiltration manifests itself, the dyspnœa sensibly lessens: is it because the quantity of liquid left by the blood in the cellular tissue so far diminishes the quantity of that which must pass through the lung? But this sort of amendment in one of the most dangerous symptoms is but temporary. The difficulty of breathing and the dropsy then increase in a nearly equal proportion, and death soon takes place. We have already discussed the important question, as to how far it was rational, in cases of this kind, always to have recourse to a debilitating treatment. Abstracting from all theoretical explanation, it is certain that in more than one old person placed in the circumstances above described, we have seen the dyspnœa become less, and the dropsy disappear, at the same time that strong stimulating applications were made to the skin, and either tonics, such as quinquina and wine, or different diuretic stimulants, such as the preparations of squill, were given internally.

In the same way that the blood accumulated mechanically in the vessels of the gastro-pulmonary mucous membrane is oftentimes deposited by real transudation on the free or adhering surface of this membrane, in a similar manner the vessels which traverse the ultimate bronchial ramifications, may also allow the blood to escape through their tunics, which blood, filling them to excess, gorges and distends them. Where, in fact, there is identity of causes and identity of organs subjected to the action of these causes, there must be an identity of effects produced. The hemorrhage which, in persons affected with aneurism of the heart, takes place very often in the lung, and which has been described and designated by MM. Laennec and Corvisart by the name of pulmonary apoplexy, recognising the same mode of production as the intestinal hemorrhage which occurs in the same individuals, must then have the same seat as the latter, that is, a mucous membrane. This is readily appreciable in the case where the transudation of blood takes place in bronchi of a considerable calibre : it is not rare to find them filled with a frothy red liquid in the bodies of aneurismatic patients who die in a state of asphyxia. But does this same transudation take place in the smaller branches and at the ultimate extremities of the bronchial tree ? Then we can no longer distinguish the very fine canals in which the blood is contained, and in one or several points of the lung we observe merely a hard black mass, which seems to us to be nothing but the result of the distension of the small bronchi of one or more lobes by coagulated blood. We have elsewhere cited cases which prove that these masses of pulmonary apoplexy may be equally met on the dead body, whether blood may or may not have been spit during life. We should be very much disposed to think, that in most of the cases the blood which is expectorated no more comes from the place where the lung is found hard and black, than from the rest of the bronchi. But the blood, after escaping from its vessels, is merely accumulated and coagulated in this place, whilst at other times it was carried out according as it was deposited on the bronchial surface. According to this way of viewing the matter, what is called pulmonary apoplexy can differ from simple sanguineous exhalation of the bronchial mucous membrane only in its being seated in the smaller branches of the air passages. It may be conceived also, that if these branches are too much distended by blood, their very delicate parietes may be burst, in the same way as they are torn if too much air distends them ; then there will be really an extravasation of blood on the exterior of the pulmonary vesicles ; but this extravasation appears to us as deserving to be considered but an accidental circumstance. Thus, then, pulmonary apoplexy, considered with respect to the anatomical lesion which constitutes it, is not in our view of the matter a particular disease differing from simple hemorrhage of the mucous membrane. With respect to the symptoms to which it gives rise, they should have something special by reason of the complete obliteration of some small bronchial ramifications and pulmonary vesicles which are their probable termination. Thence increased dyspnœa; thence again those modifications in the respiratory murmur already remarked by Laennec.

Not only the mucous membrane of the bronchi *becomes congested* mechanically, as has been just said, in the different periods of organic diseases of the heart, but very frequently also, in the same way as the gastro-intestinal mucous membrane, it becomes the seat of genuine inflammation, which first returning in an acute form, at intervals more or less remote, ultimately becomes permanent under a chronic form. The principal symptom of this is a cough more or less distressing, which is usually accompanied with a copious expectoration. These phenomena being often more apparent than those of the disease of the heart, engage particular attention, and the dyspnœa, which often becomes extreme in the midst of fits of coughing, is merely considered as the result of the pulmonary catarrh. No doubt the mere secretion of a great quantity of mucus on the inner surface of the bronchi can present no obstacle to the free ingress of air into the pulmonary vesicles, and consequently does not become a real cause of dyspnœa; but what observation seems to have proved to us is, that in the very great majority of cases, where a chronic bronchitis is accompanied with considerable oppression, there exists at the same time an organic affection of the heart: the latter is primary in a great number of cases; at other times, however, it seems to be developed only consecutively to the diseases of the air passages.

From the frequency of chronic bronchitis in aneurismatic patients, it happens that the respiratory murmur, after having been for a long time remarkable in them for its strength and clearness, becomes obscure and changed, by its admixture with the varied râles which are observed in the different cases where the parietes of the bronchi are affected with chronic inflammation. If these râles exist in the left and anterior side of the thorax, they are sometimes sufficiently intense to mask the different murmurs which appertain to the heart.

In the organic affections of the heart, more than in any other case, the small bronchi exhale in very great quantity a colourless muco-serous liquid, which accumulating in the air passages, produces during life—1st, an increase of dyspnœa; 2nd, the two varieties of moist bronchial râle, constituting, according to their seat in smaller or larger bronchi, the crepitating and mucous râles of Laennec. After death, on cutting into the lung, there is seen to flow out in great abundance the serous liquid, whose presence in the bronchi occasioned during life the symptoms just now mentioned; this liquid is seated in the bronchi, for it is intimately mixed and blended with a great quantity of air. It is evident that it would not present this frothy appearance, if it had been formed, and had its seat either in the intervesicular or interlobular cellular tissue. The presence of this liquid in the air passages constitutes the affection designated by Laennec under the name of pulmonary œdema; but this does not seem to us a suitable name, for it would seem to indicate that the serum which flows from a slice of cut lung, and the existence of which was announced during life by the crepitating râle, it would appear, I say, that this serum has its seat in the cellular tissue interposed between the different anatomical elements of the lung, which is not the case. This œdema seems to us to be nothing else than a form of secretion of the mucous membrane of the bronchi, which being found particularly in cases of diseases of the heart, is sometimes connected with a chronic inflammation of the bronchial parietes, and sometimes appears to be but the simple result of the mechanical transudation of a portion of the serum of the blood, when the latter, in consequence of the embarrassment of the circulation, fills and distends beyond measure the extremely delicate vessels which ramify over the mucous membrane of the bronchi. We do not mean to say that the interlobular cellular tissue of the lung may not itself sometimes become infiltrated with serum, and be *œdematised;* but this genuine œdema can only be recognised when, by the aid of a minute dissection, the lobules are separated from each other without being first cut into; it is then ascertained that the cellular tissue interposed between them has become more apparent by a small quantity of serum, either colourless or reddish, effused into its meshes; but this serum is not frothy: being rather closely retained in the fine cellular tissue in which it was formed, it is not seen to flow out when the lung is cut into; in a word, this is not the kind of pulmonary œdema described by Laennec; for it neither presents its signs during life, nor its anatomical characters. We shall have an opportunity of returning to this species of interlobular serous infiltration, when treating of the origin and nature of pulmonary tubercles.

The chronic bronchitis, which complicates organic diseases of the heart, should not be left to itself. We should particularly oppose to it an active treatment, when it occasions a cough which returns in long and frequent fits; for these powerfully contribute to augment the pulmonary congestion, they increase the dyspnœa, and may even be one of the causes which tend to accelerate the progress of the heart disease; in this way the pulmonary catarrh, after having appeared only consecutively to the lesion of the heart, hastens on the progress of this lesion. Leeches applied from time to time over different points of the thoracic parietes, blisters or other topical irritants placed on these same parietes, oftentimes diminish the intensity of the bronchitis in a remarkable manner. The inspiration of emollient vapours we often found useful. When the bronchial inflammation is essentially chronic, when the principal symptom which announces it is a very abundant secretion of mucus, when the fits of coughing seemed brought on principally by the instinctive desire to expel this mucus, we must have recourse to another mode of treatment. Then we have seen, in more than one case, after antiphlogistic means were employed without any benefit, different substances more or less stimulating to be administered with advantage. On such occasions M. Lerminier often employs different resinous preparations, and in particular Morton's balsamic pills, the root of polygala senega, quinquina, Iceland moss, kermes mineral. Under the influence of these different medicaments, we have seen in more than one case the expectoration become less abundant, the fits of coughing be rendered less frequent, and consequently the distress sensibly diminish, whether caused by the enormous quantity of mucus secreted and accumulated in the bronchi, or more particularly as having been the result of the disturbance of the circulation produced by the fits of coughing. A similar amendment has sometimes succeeded the frequently repeated exhibition of tartar emetic in a dose capable of exciting vomiting, or of strong purgatives. It is not necessary to mention that, when these different therapeutic means are employed, the greatest attention must be paid to the effect they produce, whether in the primæ viæ, or in the heart itself. They must be abstained from, if there be reason to suppose that the stomach is already irritated, or that it is very susceptible of irritation ; they must also be given up, if the pulsations of the heart are accelerated, if the least exasperation be observed in the local or general symptoms which announce the affection of this organ. But if no such thing exists, we recommend practitioners to try with confidence this mode of treatment ; our own experience has satisfied us of its advantages : here, as in many other instances, this method will be useful or injurious, according to the circumstances under which recourse may be had to it.

At other times, when the fits of coughing are very distressing without the expectoration being very abundant, when they are accompanied with much dyspnœa and anxiety, the same benefit can by no means be derived from the different stimulating medicines of which we have spoken ; narcotic preparations, in different forms, may then be given. The gummy extract of opium, the salts of morphine, the extracts of lactuca virosa, hyosciamus, belladonna, aconite, prussic acid, prescribed in suitable doses, are means which, though they do not stop the bronchitis, calm and moderate, however, its most annoying symptoms, and which may exercise, we repeat it, the happiest influence over disease of the heart itself, by diminishing the frequency and severity of the fits of coughing, which contribute very much to exasperate it. In such cases I have seen the sulphate of quinine, combined with opium, render these same kinds of cough more infrequent, and less painful, when mere emollients were found not to have the slightest influence on them.

21. There is another organ, which, as frequently as the gastro-pulmonary mucous membrane, becomes the seat of very remarkable venous congestions, particularly when the right cavities of the heart are affected ; that organ is the liver. It is only consecutively to its engorgement, that the mucous membrane of the digestive tube becomes seriously injected.

It is not only after death that venous engorgement of the liver may be ascertained in aneurismatic patients. If this engorgement is carried to a certain degree, the liver increases in size ; it passes beyond the edge of the ribs, and makes a greater or less projection below them. This organ is thus seen to become tumefied very rapidly after an exasperation in the symptoms of the disease of the heart. The presence of the liver below the ribs is then recognised, either because its thin edge may be easily circumscribed in the hypochondrium, or merely because in this same hypochondrium, an unusual resistance is found, on feeling it, which does not exist on the opposite side. Oftentimes, also, this tumefaction of the liver is but temporary, and when under the influence of suitable treatment, and particularly copious blood-letting, the symptoms of the disease of the heart have been ameliorated, the liver is no longer found below the ribs, and the right hypochondrium recovers its former softness. Thus we may see the liver descend several times into the hypochondrium, in the course of a disease of the heart, and so low too that it may be felt on a level with the umbilicus, and then, at the end of a very short time, it retreats and reascends behind the ribs. At other times, however, the engorgement of the liver survives the exasperation of the symptoms of the disease of the heart: though the disturbance of the circulation is no longer but inconsiderable, and the respiration is but slightly embarrassed, the liver retains an unnatural size, and its engorgement then may often keep up the intestinal congestion as much and more than the disease of the heart, and thus produce ascites. It is in cases of this kind that the frequent application of leeches, either over the region of the liver, or in particular to the anus, an hemorrhagic derivation produced and kept up towards this latter point, a gentle revulsion on the intestinal canal by means of laxatives, travelling also, which may produce a favourable change in the circulation of the liver, have caused these hepatic engorgements to disappear, which commenced in simple venous congestion, and which is one of the affections designated by the vague term of obstructions of the liver. Do these engorgements of the liver, which are altogether mechanical, being connected with a disease of the heart, sometimes originate a certain number of organic affections of this viscus? We shall have an opportunity of discussing elsewhere this important point of practical medicine *.

22. At the same time that the liver increases in size, under the influence of a venous congestion, it would seem that the spleen, whose blood, carried by the splenic veins, traverses the liver before returning to the heart, must become engorged and tumefied in the same proportion as the liver; nothing of the kind however happens, and in the cases where, after a disease of the heart, all the tissues, and particularly the liver, were gorged with venous blood, we have indifferently found the spleen, sometimes tolerably large, sometimes with its normal dimensions, sometimes too even smaller than in its natural state. In one case, in particular, where the liver, soaked with blood like a sponge, filled the right hypochondrium, as well as the epigastrium, and descended to the level of the umbilicus, the spleen, which was of a tolerably dense texture, and of a brownish red interiorly, was scarcely as large as a nut. Would it not appear, however, that, in consequence of its texture and of the functions attributed to it by several physiologists, the spleen must become gorged with blood more easily and to a greater amount than the liver, in all cases where there is a disturbance of the circulation †?

---

* The influence of these merely mechanical hyperemias of the liver on the production of its organic affections, appears at least very questionable. In fact, such affections are but very rarely met in the liver of individuals affected with diseases of the heart. Thus the mere fact of the habitual sojourn of an unusual quantity of blood in an organ is not sufficient to produce in this organ lesions of nutrition or secretion.

† Since the publication of the first edition of this work, I think I have ascertained that the ordinary state presented by the spleen in diseases of the heart, is a great density of its tissues.

ARTICLE II.

SEROUS CONGESTIONS.

23. When in a living animal the principal vein of a limb be tied, the experiment being so conducted that the blood cannot be freely carried by the collateral veins above the part tied, this vein becomes distended below the ligature, and, consecutively to this obstacle to the venous circulation, some serum is effused around the tied vein (Fodere). If, in man, a large venous trunk be compressed, or obliterated, so that the blood no longer circulates in it, whilst at the same time the collateral vessels can supply but imperfectly the principal vein thus obstructed, an effusion of serum is also seen to take place where this venous engorgement has occurred (Bouillaud). This dropsy is even much more marked than that which takes place in an animal in which a large vein has been tied, because in this latter case the collateral veins cannot be obliterated by the experimenter, as they are often in man, when the principal vein in which they terminated has become diseased. But if the obstruction no longer exists merely in the veins of a limb, if it occur in a vessel into which the blood of a much greater number of parts empties itself, then the dropsy will necessarily become more considerable. If, for instance, the obstacle to the return of the blood exists in the abdominal vena cava, the two lower extremities, as also the scrotum, will become filled with serum. If it be the trunk of the vena portæ, which is more or less completely obliterated, it is in the peritonæum that the serous collection will first take place; it is in this way we may suppose that certain diseases of the liver become causes of ascites. If, in fine, the obstacle to the free return of the venous blood exists at the very centre of the circulation, namely, at the heart, we must then draw the theoretical conclusion, that, in this case the circulation of the venous blood being every where embarrassed, serous collections must form in all directions, and the dropsy become general. This case, anticipated by theory, is actually established by experience. All practitioners know that dropsy is one of the most common symptoms of the different organic affections of the heart; and from what has been said this may be easily accounted for. These different pathological facts receive also a strong illustration from the splendid experiments of M. Majendie, regarding the causes and mechanism of exhalation and absorption; and, in their turn, they illustrate these experiments, and confirm their results.

24. All the organic affections of the heart are not followed by dropsy with equal frequency, and in the same degree; and here again experience discloses what theory might anticipate. In fact, it is principally in the cases of change in the proportion of the right cavities of the heart that the most considerable serous congestions are seen to manifest themselves. The separate alterations of the right side of the heart, which we have seen to coincide with these congestions are the following; we shall enumerate them in the order of their frequency:—

1. Dilatation of the cavity of the right ventricle, with hypertrophy of its parietes.
2. The same alteration, and still further, a similar lesion in the auricle.
3. Dilatation of merely the cavity of the right auricle with hypertrophy of its parietes, and at the same time an obstacle to the free passage of the blood from the cavity of the auricle into that of the ventricle. We have seen three cases of this kind.

In two cases the narrowing of the auriculo-ventricular orifice was owing to the cartilaginous thickening of the tricuspid valve. In the third case this valve was replaced by a sort of fibrous septum nearly immoveable, a real diaphragm, pierced at its centre by a round opening which could scarcely admit the end of the little finger.

4. Dilatation of the cavity of the right auricle and hypertrophy of its parietes, without the existence of any obstacle at the auriculo-ventricular opening; no other lesion in the heart. We have seen this case but once. The first symptoms of heart affection declared themselves in this case after an acute pericarditis; here, as in other cases already cited, this pericarditis appeared to be the occasional cause, under the influence of which the right auricle of the heart became aneurismatic. This case seems deserving of being given in detail.

A man sixty years of age, of a very strong constitution, having served in most of our campaigns, from that of Egypt to that of 1815, enjoyed good health till the March of 1822. He never had experienced any difficulty whatever in his breathing. He was then attacked with an intense bronchitis, which still continued May the 5th. On that day, without any known cause, he was seized with a very acute pain in the præcordial region; at the same time he had extreme dyspnœa, very great general anxiety, and was obliged to keep his bed. (Copious bleedings were resorted to.) At the end of from eight to ten days, these symptoms were amended, but the breathing remained embarrassed; this dyspnœa went on increasing, the strength diminished, and the patient entered the La Charité the 22nd of July. For the last three or four days only the parts around the ankles began to appear œdematous; from the 22nd of July to the 15th of August the œdema extended to the centre of the lower extremities, to the upper extremities, and the peritoneum itself soon became filled with liquid. The tincture of digitalis, at first given in the dose of fifteen drops in a mixture, then raised at the end of some days to thirty, was discontinued, because it occasioned vomiting, which ceased spontaneously as soon as the use of the digitalis was given up. The beats of the heart were heard to be in their normal state in the præcordial region; they were not heard under the left clavicle, but at the lower part of the sternum they were very perceptible, and accompanied by a loud bruit. The pulse was weak and regular; the respiratory murmur was heard everywhere loud and distinct. (Leeches were applied from time to time to the anus; blisters to the legs.)

Towards the end of August the thighs were enormously distended; incisions were made into them, which soon emptied them, but were followed by very acute pains, though no redness was observed round the incisions. In a little time severe diarrhœa set in; the patient became rapidly exhausted, and soon died in an adynamic state.

The pericardium was found adhering to the heart through all its extent. The left cavities of this organ were in their natural state, as was also the right ventricle. But the right auricle, enormously dilated, exceeded in size the three other cavities of the heart combined. When emptied of the half-congulated black blood which filled it, it retained nearly the same size. Its parietes were evidently hypertrophied. The right auriculo-ventricular orifice was perfectly free. The great arterial and venous trunks presented nothing remarkable. General injection of the digestive tube. Liver gorged with blood.

5. Another affection of the right side of the heart, which we have seen to coincide with general dropsy, is an almost total effacement of the cavity of the right ventricle, without the parietes of this ventricle being otherwise hypertrophied, or the other parts of the heart presenting the slightest trace of organic change. In this case the dropsy seemed to recognise as its cause the permanent engorgement of the right auricle, which could drive into the diminished cavity of the ventricle but a very small quantity of the blood which it received from the veins. During life auscultation could discover in the heart no appreciable lesion, and the dyspnœa had never been very severe.

In a second class of dropsical patients, there is found no alteration in the right cavities of the heart; but on the left side the heart is seriously affected. The following lesions are found in it:—

1. Obstacles of different kinds, either at the auriculo-ventricular orifice, or at

the aortic orifice, coinciding with different degrees of dilatation and hypertrophy of the left ventricle and auricle. The common result of these obstacles is to prevent the free afflux of the blood of the pulmonary veins into the auricle; thence embarrassment in the right cavities, consecutive on the left circulation, and hence the production of dropsy. It must not be forgotten, however, that in some cases we have found either the mitral valve, or the aortic valves, covered with bony incrustations of sufficient size to impede their movements, in persons already advanced in years, who died of an affection totally unconnected with the organs of circulation, without having ever had the least trace of dropsy.

2. Increase in the size of the ventricle and auricle of the left side (dilatation of the cavities or hypertrophy of the parietes), without obstacles at the orifices.

3. Simple hypertrophy of the parietes of the left ventricle, with dilatation or narrowing of its cavity, and the existence of an obstacle at the aortic orifice.

4. The same alteration of the left ventricle, but without any obstacle at the mouth of the artery.

In certain cases, where there was anasarca and ascites, we found only this latter description of change in the heart; but as in several other subjects, and even in the greatest number, there is observed a similar lesion of the heart, without there ever being any trace of dropsy, we should perhaps conclude from this, that in cases of this kind, where the latter was observed, there was but a mere coincidence between the existence of serous congestion and that of isolated hypertrophy of the left ventricle, without an obstacle at the aortic orifice. It may be conceived, however, that when the cavity of this ventricle is very small, and at the same time its contractions are performed with but little energy, the blood having arrived in the left auricle cannot be admitted into the ventricle with as much facility as in the normal state; this obstacle to the entrance of the blood, resulting from the diminution of the cavity of the ventricle, may be equivalent, with respect to its effects, to the obstacle arising from the narrowing of the auriculo-ventricular or aortic orifices. Thence, as in the other case, a reflux, a stagnation of the blood in the pulmonary vessels, engorgement of the right cavities of the heart, &c.

In fine, we may rank in a third class those dropsical patients in whom the two sides of the heart are simultaneously affected. Thus, under certain circumstances, the left ventricle is so developed that it seems to have encroached on the place of the right ventricle, which in reality no longer exists, except in the form of a kind of appendix, with a cavity that is very small, and totally insufficient to receive all the blood which in the normal state should be sent to it by the right auricle. At other times the two ventricles are simultaneously dilated and hypertrophied; the auricles may be at the same time enlarged in the same proportion, and then the entire heart may present an enormous size. Sometimes, even when the dimensions of the entire heart are thus prodigiously increased, the orifices of communication between the different cavities of the heart are found to be narrowed; sometimes these orifices have all retained their normal diameter, and the valves at their circumferences have preserved their usual freedom of action, and their natural mobility. In the first of these cases, the determining cause of the dropsy is easily conceived whatever be the orifice altered; but, in the second case, why is it produced? For then all the cavities being nearly in the same physical conditions, must they not receive and propel the blood which enters them in an equal proportion and with equal freedom? If, then, there be no obstacle to the circulation, if there be neither stagnation nor retardation of the course of the blood within the heart, the dropsy should not take place. There is no doubt, however, but that it is observed to occur in cases of this kind; then the cause may probably be sought in the excess of capacity of the cavities of the heart relatively to that of the vascular system. But our own observation warrants us in concluding, that serous congestions are then much less constant and less considerable, than when the simultaneous increase in the dimensions of the different cavities of the heart coincides with the narrowing of one or more of their orifices.

25. The dropsy, caused more or less directly by the different kinds of organic affections of the heart, which we have now passed in review, presents in its successive development a nearly uniform course. It may be laid down as a sort of law, that in all dropsy connected with a disease of the heart, the serous effusion begins to manifest itself towards the inferior part of the lower extremities around the ankles. This effusion attacks by little and little the entire of these limbs, extending always from below upwards. Often, but not always, the hands become infiltrated at the same time as the circumference of the ankles, and before the œdema has gained the upper part of the legs. The total infiltration of the upper extremities is more rare than that of the lower; it never takes place in some aneurismatic patients. The face begins to become tumefied at an early period; but this tumefaction remains for a long time very inconsiderable, and it would at first appear to be an increase in flesh. The infiltration of the face does not become really considerable until the dropsy has attained a very high degree in the other parts of the body. The infiltration of the scrotum and of the penis developes itself in some patients almost at the same time as the œdema of the circumference of the ankles; in others, by reason of those inexplicable individual dispositions so constantly observed in the study of pathology, this infiltration does not supervene until serous congestions exist already in several parts. With respect to the infiltration of the subcutaneous cellular tissue of the thoracic and abdominal parietes, nothing determinate can be said regarding the time of its appearance.

The cellular tissue diffused over the interior of the body also presents occasionally traces of infiltration, in cases where the dropsy has been considerable and of long duration. This infiltration is particularly observed—1st, in the sub-serous cellular tissue, either that interposed between the mediastina, or that which exists between the substance of the heart and the pericardium; 2nd, in the submucous cellular tissue, whether of the gall-bladder, or of the urinary bladder, or of different parts of the intestine, but never of the stomach.

Among the serous membranes, the peritoneum is that which is most frequently filled with serum, consecutively to organic affections of the heart. But almost always, the first signs of ascites do not begin to manifest themselves till the infiltration of the cellular tissue has progressively extended from the malleoli to the upper part of the thighs. If the contrary takes place, we may conclude almost with certainty that the production of the ascites is not owing to the disease of the heart, whether the latter exist or not, and that it depends, for instance, on an affection of the liver, or on a more or less latent peritonitis, &c.

The effusion of serum into the pleuræ, or in other words hydrothorax, results much more rarely than ascites from organic diseases of the heart; it is the same with hydropericardium. With respect to the accumulation of serum in the different portions of the cerebro-spinal arachnoid, it has not appeared to us to be manifestly greater in cases of disease of the heart than in other affections.

Theory might easily have foreseen these different results of experience. The first traces of dropsy, we have said, appear around the ankles; and it is actually in this part, the most remote from the heart, that the influence of an obstacle to the venous circulation, existing at the very centre of this circulation, should begin to be first perceptible. Serum, we have again said, accumulates more frequently and in greater quantity in the peritoneum than in the other serous membranes; this is easily accounted for by the passage of the veins of the peritoneum through the liver gorged with blood.

26. The different serous congestions now enumerated, form and increase with very variable rapidity. There are some individuals in whom the only trace of dropsy observed for a very long time, is a little œdema around the ankles. In

others, on the contrary, a very few days after the first appearance of this œdema, the entire cellular tissue and the peritoneum become filled with a great quantity of serum. We once saw a very large double hydrothorax form in less than fifteen hours in an aneurismatic patient, who was for a long time affected with anasarca and ascites. The last time we saw him, he was carefully examined both by means of auscultation and percussion. The respiratory murmur was heard everywhere with strength, and in several parts its clearness was modified by different râles. Everywhere also the thoracic parietes, when percussed, seemed to resound as in their natural state, neither was the patient in a condition at all different from that in which he was on the preceding days. No new symptom appeared in him up to two o'clock in the afternoon, but then he began to feel his breathing more embarrassed than usual ; in the evening the dyspnœa became extreme. The following morning at seven o'clock he was evidently dying. The violet colour of his countenance indicated that he was dying in a state of asphyxia —at eight o'clock he was no more.

The autopsy showed the existence of an enormous effusion of limpid serum into each pleura. The two lungs were strongly compressed along the sides of the vertebral column. The entire cavity of the thorax seemed in a manner filled with nothing but the liquid of the pleuræ, as well as by the heart, which presented its two ventricles dilated and hypertrophied with ossification of the aortic valves and of the aorta itself.

No doubt the double hydrothorax discovered on the post mortem examination, did not begin to form, or at least did not become any way considerable, till about fifteen or twenty hours before death. Effusions have been more than once seen to form as rapidly in consequence of acute pleuritis ; but that is, I think, much rarer in hydrothorax. Besides, it may be doubted whether in this case the hydrothorax was the product of the affection of the heart. It always happens that, if it was the result of a modification of the venous circulation this modification cannot be appreciated ; if it had its seat in the heart, why do we not see the anasarca and ascites increase at the same time ? There is a something unknown in the matter, which we are not yet able to unravel.

Just as certain serous effusions are formed with great rapidity, in the same way do we see several of these effusions sometimes disappear with remarkable promptness. There are some patients, in whom, notwithstanding all the means employed, the dropsy has remained stationary for several months ; then all at once without medical treatment appearing to contribute to the matter in the slightest degree, the effused serum disappears,; no trace of it is any longer observed at the end of a very few days ; sometimes the total reabsorption is still more prompt ; we have seen it, for instance, commence and be completed in less than twenty hours.

This rapid reabsorption of serum is accompanied by different phenomena, and produces various results, which it is important to consider.

The rapid disappearance of the dropsy is sometimes preceded and accompanied by an obvious improvement in the state of the patient ; sometimes, on the contrary, it is as it were the signal of the most alarming consequences, and is followed almost immediately by death.

In the first case, at the same time that the effused liquid is reabsorbed, different serous fluxes manifest themselves ; we have elsewhere mentioned a case in which the reabsorption of a hydrothorax coincided, in one patient, with the exhalation of a great quantity of serous fluid at the surface of the bronchi : in another patient we saw an intestinal flux, which was also serous, manifest itself at the same time that an ascites disappeared. All practitioners know that great discharges of urine consisting in a great measure of serum, also that copious sweats coincide often, as cause or as effect, with the disappearance of several dropsies. These two latter fluxes seldom coexist ; however, we very lately saw an instance of it in a young man, who presented obscure local symptoms of a disease of the heart, and who was affected with anasarca and ascites for more than two months. The skin was habitually dry, urine scanty and deposited a sediment. All at once and simultaneously very abundant sweats set in, and a great quantity of serous urine was discharged. This double exhalation continued for three days, and in that time the dropsical liquid was reabsorbed.

Under other circumstances this fluid is absorbed without any unusual evacuation being observed at the same time. What becomes of the serum then? It remains mixed up with the blood, whilst in the former case it seems to be separated from it at the surface of the skin and in the parenchyma of the kidneys.

Can this great quantity of serum remain with impunity in all cases, mixed with the blood? May it not sometimes give rise to fatal consequences, either from the sudden increase of the mass of fluid circulating in the vessels, or from the equally sudden change in the nature of its constituent principles? It is certain that these results supervene, and may be very well ascertained in animals, into whose veins a certain quantity of water has been injected. During the time immediately following this injection, an undoubted influence is exercised on their brain: they remain immoveable, and sink down; their walk is tottering. At the same time, and more constantly still, their respiration becomes hurried, they pant, as if they had been running a long distance; but the secretion of urine, and particularly the pulmonary exhalation, soon become more abundant. By means of these salutary evacuations, the system becomes freed from the foreign liquid introduced into the circulation, and the animal quickly returns to the state of health. If the injection of the water be continued, more serious consequences are perceived: the lung becomes more and more engorged, and death supervenes, amidst something like a state of asphyxia. We find on the dead body, 1st, the lungs filled with a great quantity of frothy serum; 2nd, commencing aqueous effusions into different serous cavities.

May we make an application of these facts to what takes place in man, when dropsy to a considerable extent disappears all at once without any evacuation taking place? What we wish to state is, that in such cases we have several times seen the same series of phenomena manifest themselves in man as in the animals who received a great quantity of water into their veins. Thus, without an additional appreciable lesion of any organ, without any known cause, during and after the the sudden disappearance of the dropsy, the patients sink all at once, their intellects become impaired, their sensations are abolished, their breathing is embarrassed, the tracheal râle sets in, and they die very soon in a state of asphyxia. This we have seen several times. In such cases the autopsy discovers the pulmonary apparatus considerably engorged with a colourless, frothy serum. In some instances at the same time that one serous cavity is emptied of the liquid which was accumulated in it, some other serous cavity becomes the seat of a new dropsy *; and what is remarkable is, that this species of metastasis sometimes takes place to those cavities, which are most seldom filled with serum, in consequence of diseases of the heart. Thus, in the individual affected with double hydrothorax, whose case we have already mentioned, the abdomen became lessened in size, the collection of fluid in the peritoneum was reabsorbed at the same time that the pleuræ became filled with serum. Here is another and rather a rare instance of this sudden metastasis of dropsy.

A man, about fifty years of age, was admitted into the La Charité in 1819: he presented, in a very marked manner, the different local and general symptoms of an organic affection of the heart; particularly he had considerable anasarca and ascites. One morning we found him entirely deprived of consciousness, the eyes fixed, the mouth open and immoveable, the face pale. The four extremities when raised, fell again by their own weight, as inert masses; the skin, when severely pinched, presented only some traces of obscure sensibility, that was indicated by a

---

* For a case of this kind, see Part I. p. 23, note.—Tr.

slight contraction of the muscles of the face. This apoplectic state manifested itself only since the preceding night; for we were assured that the day preceding, the patient still enjoyed all the freedom of his movements, as well as the perfection of his intellects. One circumstance struck us: the abdomen, *which was very large twenty-four hours before, was considerably diminished in size, and fluctuation was no longer perceptible: the infiltration of the limbs was also gone.* The breathing was accelerated and accompanied with a râle: he died some hours after the visit.

Nothing resembled an attack of apoplexy more than the group of symptoms presented by this individual during the last hours of his existence; still no trace of hemorrhage was found in the brain; but the cerebral hemispheres appeared as it were sunk; when touched, they gave the sensation of a sort of obscure fluctuation. They were cut into from above downwards into thin slices, and we had not yet arrived at the ordinary level of the upper wall of the lateral ventricles, the centrum ovale of Vieussens was not yet exposed, when the fluctuation was become extremely perceptible, and soon, on removing one thin slice more, a considerable quantity of colourless limpid serum was seen to gush forth with force. This serum accumulated in the lateral ventricles, as well as in the third, and had distended them prodigiously; the middle parts of the brain (corpus callosum, septum, and fornix) had preserved their usual consistence; only the septum was remarkably transparent. No other appreciable alteration existed in the brain or its appendages, In the chest, the lungs were found engorged, the heart increased in size in all its cavities, with cartilaginous and bony incrustations at the circumference of the auriculo-ventricular and arterial orifices of the left side. In the peritoneum there was but a very small quantity of serum occupying the flanks, and the cavities of the pelvis: when the limbs were cut into but a very small quantity of liquid flowed from them.

This case presents an instance of true serous apoplexy, the commencement of which coincided in a very marked manner with the reabsorption of the fluid, previously accumulated in the peritoneum and cellular tissue of the extremities.

The sudden reabsorption of serous congestions, without any supplementary evacuation, is not, however, uniformly followed by symptoms as serious as those now described. Is it because in this case the vascular system, containing but little blood, may receive an additional quantity of liquid with impunity? Thus, when before injecting water into the veins of an animal, we have bled him copiously, none of the phenomena just mentioned are seen to occur in him. We can conceive also, that there may be several other reasons for the difference of the effects produced in consequence of the sudden reabsorption of dropsical liquids.

Dropsy may manifest itself at different periods of the disease of the heart. First, it must be acknowledged that, cæteris paribus, the time at which the first serous congestion appears, varies in a very singular manner, by reason of unaccountable individual peculiarities; but further, this appearance, more or less premature, is often dependent on the kind of lesion which the heart has undergone. Thus our cases lead us to admit the following general rules, which, however, we say, are far from being without exception; these rules are nothing but the expression of the most constant elements, which we have been able to obtain amidst the great number of infinitely varying elements constituting the phenomenon, which we are endeavouring to analyse.

1st. When the disease of the heart has its primary seat on the right side, and when this disease is one of those which may cause any obstacle to the return of the venous blood towards the right auricle, dropsy may develope itself at a very early period; it may for a long time precede the dyspnœa; it may, in a word, be the first morbid phenomenon, which induces any suspicion of the existence of a disease of the heart, the other symptoms of which, whether local or general, will not show themselves till a very late period.

2nd. When on the contrary the disease of the heart exists primarily on the left side, if it happen to be one of those which we have above noticed as being capable of embarrassing the pulmonary circulation, then the dropsy does not ordinarily show itself till a longer or shorter time after the other signs have appeared. It is almost always preceded, in this case, by a difficulty in the breathing, which may last for several years before the first traces of dropsy have appeared.

3rd. In fine, if the two sides of the heart be simultaneously affected (which is certainly the most usual case), nothing so precise can be any longer laid down; and according to the predominance of the affection of such or such a cavity of the heart, the dropsy will be seen to precede, accompany, or follow the dyspnœa, and the other morbid phenomena.

27. Whatever be the period at which serous congestions first appear, in the majority of cases they are seen to appear and disappear several times before they become permanent. The first attack of dropsy is sometimes separated from the following by a great number of years; during the interval the individual sometimes presents all the appearances of good health, sometimes he has palpitations, habitual or intermittent dyspnœa, and other well-marked signs of an organic affection of the heart.

The causes which influence the return of the dropsy are those which, by exasperating the disease of the heart, tend to disturb the venous circulation: these causes are very numerous. Thus among these causes the varied modifications produced on the heart by the innervation deviating from its normal state occupy one of the first places. Thus, in individuals who, labouring under an affection of the heart, have already had an attack of dropsy at a period more or less remote, we see the latter reappear in consequence of violent mental emotions, night-watching, and exertion of mind; these causes may also produce a primary serous congestion; but when the latter has once taken place, it is then reproduced with much more facility under the influence of the slightest causes. We have sometimes seen at the La Charité persons labouring under aneurism of the heart which was not yet far advanced, in whom the dropsy manifested itself with increase of the habitual dyspnœa, of the palpitations, &c., after excess in spirituous liquors; in others it was after violent exercise, or unusual bodily fatigue, that the dropsy supervened.

Different diseases which manifest themselves during the progress of the affection of the heart sometimes exercise a remarkable influence on the production of dropsy; and always primarily by modifying the movements of the heart, whence results an increase in the embarrassment of the venous circulation. Thus, in several aneurismatic patients we have seen serous congestions either establish themselves for the first time, or reappear in consequence of an acute inflammation of the pulmonary parenchyma, or even of a simple chronic bronchitis, which had become momentarily exasperated, and had passed into the acute form; in other patients it was during a gastro-intestinal inflammation, or after it, during convalescence, that the dropsy became manifest. We shall cite the following case in particular, which appears worthy of remark for this reason, that the disease of the heart began to manifest its existence only at the same time as the dropsy, which supervened for the first time during convalescence from a gastro-enteritis.

A man, twenty-three years of age, presented the following state when he entered the La Charité, in April 1824: general debility, face red, suborbital headach, tongue white with red points, great thirst, pain in the epigastrium, increased by pressure; serous diarrhœa; pulse frequent, regular, and full, presenting the characters usually existing in every febrile disturbance. (Leeches to the anus.) For the eight or ten days following the fever did not abate; the tongue assumed an uniform red tint; the intelligence became disturbed at intervals; he was bled twice, and towards the fifteenth day of the disease, the symptoms which had constantly been getting worse, began to amend, and the patient was proceeding gradually towards convalescence. The tongue had for some days back recovered its natural appearance, the diarrhœa had ceased, and the fever was quite gone, when the person observed to us that his legs were infiltrated: we then interrogated him carefully with respect to his habitual state of health previous to the acute affection for which he had entered the hospital: he assured us that he had always been in excellent health before his present illness; that he never had the slightest appearance of dropsy; that on no occasion had he experienced either pain or palpitations in the precordial region. We examined the heart with the stethoscope; it did not present either unusual impulsion or bruit, but its beats were heard over a great extent, namely, all along the sternum, and on all the anterior part of the thorax on the right side; the pulse, being again examined, presented no morbid character. From the information furnished by auscultation, and notwithstanding the absence of dyspnœa, we thought it probable that this person had a dilatation of the right cavities of the heart; thence the true cause of the commencing dropsy: the latter made rapid progress; in less than fifteen days the entire subcutaneous cellular tissue was infiltrated, and manifest fluctuation was observed in the abdomen. However, the breathing remained free. (Frictions, with tincture of digitalis, and vinum scillæ; blisters to the legs; oxymel of squill, &c. &c.) The dropsy neither increased nor decreased for nearly a month; then, at the same time that the urine began to flow in abundance, the infiltration promptly disappeared, and he soon left the hospital, fancying himself quite recovered, but still retaining what we considered an appreciable morbid phenomenon, namely, the unusual extent of the heart's pulsations.

Few dropsies more closely resembled what has been called essential dropsy, than that with which this patient was attacked; however, it was connected with an affection of the heart, it was the first symptom which made us suspect its existence. Having supervened during convalescence from an acute disease after a prolonged course of medical treatment and several bloodlettings, did this dropsy depend on this circumstance, namely, that the right cavities of the heart being dilated, having lost their ordinary contractile power, allowed the blood to accumulate within them? According to this view of the matter, the best treatment to be employed in this case was to give the patient wholesome strengthening nourishment, in moderate quantity. In fact, we might remark, that in this patient the active exhibition of diuretics did not perceptibly contribute to the disappearance of the dropsy, but that it disappeared according as nourishment was allowed, and the patient recovered strength. Thus, then, though having the advantage over the ancient physicians, of recognising the real organic cause of this dropsy, we were led in this particular case to the same mode of treatment as that which would have been employed by them. We are convinced that if, in this case, in consequence of the existence of the affection of the heart, strict diet and more bleedings had been employed, the symptoms of the organic affection, far from disappearing, would have become more and more severe.

In this particular case the assertion above advanced also finds confirmation, namely, that when the aneurism commences on the right side of the heart, the dropsy may become manifest before the breathing has become embarrassed, or at least before such embarrassment has been perceptible to the patient.

28. Dropsy, considered as a sign of organic affections of the heart, may afford, with respect to the existence and nature of these affections, information, the importance and accuracy of which will vary according to the circumstances which we shall now enumerate.

First, there are cases where, at the same time that there is dropsy, we observe other signs characteristic of an organic affection of the heart, such as those furnished by the respiration, by the pulse, by auscultation, by the application of the hand over the precordial region. Then the cause of the dropsy cannot be doubtful.

At other times the pulsations of the heart present nothing unusual; they are sometimes even more obscure than in the normal state. The pulse retains its strength and its usual regularity; but the patient breathes with difficulty, and traces of dropsy begin to manifest themselves. It is in cases of this kind that before the recent progress made in pathological anatomy, before the writings of Corvisart, it used to be said that the patients were threatened with dropsy of the chest, and no account was taken of the latent affection of the heart. But it is now quite clear to all those who have cultivated pathological anatomy, that nothing is rarer than an idiopathic hydrothorax. Out of about six thousand patients we have not observed more than five in whom there existed what we would consider real essential dropsy of the chest; that is to say, unaccompanied by any appreciable lesion which could account for the great effusion of serum into one of the pleuræ. In this small number of cases the hydrothorax was the only serous collection which existed, it was sometimes preceded either by ascites or anasarca.

From these facts it follows that the coincidence of dyspnœa and of dropsy, without any other sign to announce an affection of the heart or liver, does not indicate, as several writers have stated, and as several respectable physicians think, the present or future formation of the disease called *dropsy of the chest.* But are these two morbid phenomena sufficient to afford certainty that there exists an affection of the heart, when the latter does not reveal its existence by any other symptom? The mode in which the dropsy developes itself may here afford the greatest light. If it first show itself around the ankles, and has extended progressively from below upwards; if the upper extremities and face are also infiltrated; if the ascites has manifested itself only consecutively to the serous congestions of the extremities and face; if, in fine, the dyspnœa observed has existed before the ascites was considerable, and that, consequently, we cannot refer it to the mere pressure made on the diaphragm by the peritoneal liquid, then the probabilities for the existence of a disease of the heart become so strong, that they may be considered as nearly equivalent to certainty; for the examination of the body after death proves that when this aggregate of morbid phenomena has shown itself, it is only in extremely rare cases that the heart has not been found affected.

It follows from these considerations, that in the absence of the local signs furnished by auscultation, the existence of diseases of the heart may be oftentimes detected with almost equal certainty, by the general signs now pointed out. It may happen, also, that the signs afforded by auscultation, the pulse, &c., after having been very manifest, disappear, or become at least much more obscure; we observe this often enough in the hospital, when the patients have been sojourning there for some time. It is then only by the existence of the dropsy, by the particular way in which the face is injected, by the dyspnœa which is diminished, but which has not disappeared, that the affection of the heart can be still recognised. If in this state we make the patient take a little exercise, we often see all the different local signs previously observed reappear all at once, and with great intensity.

In fine, it may happen, as we have already said, and as we have also exemplified, that there is not even much dyspnœa, and that dropsy remains the only sign of heart-disease. What is the value of this separate sign? If in this case the ascites is the first serous congestion which has manifested itself, we may be certain that it is not connected with a disease of the heart. If the dropsy, commences, on the contrary, in the extremities, and particularly in the lower extremities, we may still dread the existence of a commencing lesion in the central organ of the circulation, but nothing strictly proves it. In the case where the dropsy commences in the peritoneum, it is nearly certain that its cause should be referred, either to a latent inflammation of this membrane, or to some disease of the liver. On the contrary, if it manifest itself first in the lower extremities, the heart may be intact, and the obstacle to the circulation may reside in a total or partial obstruction of the abdominal vena cava. We do not speak here of aneurisms of the aorta, which have also been considered as producing dropsy; for experience has taught us that it is only in some degree exceptionally that these aneurisms give rise to collections of liquid either in the cellular tissue or in the serous membranes. In fine, in some individuals (the number is to be sure but small), the study of the symptoms and the post mortem examination have not discovered to us any species of appreciable alteration, present or past, to which the dropsy could be referred, which in this case must be called *essential*, that is, *unaccompanied by any visible lesion.*

In the number of those dropsies called essential, or at least regarded as such from the symptoms, we shall place those which frequently occur after scarlatina. It cannot be said in this case, that the dropsy is the result of the irritation of the skin communicated to the subjacent cellular tissue ; for, 1st, it is some time after the disappearance of the exantheme, when the epidermis is desquamating, that the first traces of dropsy begin to appear ; 2nd, the latter manifests itself indifferently, both in the parts where the skin was reddest, and in those where it scarcely lost its natural colour ; 3rd, we have seen it commence in a part remote from the skin—for instance, in the peritoneum, without there being any appreciable sign of inflammation of this membrane. If it were necessary for us to give an opinion on the probable cause of this remarkable species of dropsy, we would ask whether it may not be admitted, that during scarlatina, and after it, during the period of desquamation, the exhalation which ordinarily takes place on the surface of the skin is not suspended, and whether then the serum which no longer escapes through the skin in the form of insensible transpiration may not be deposited, more or less modified in its nature, either into the exhalant areolæ of the cellular tissue, or into the serous membranes ; this is what happens in a thousand other cases, one secretion supplying another. What would lend additional weight to this mode of viewing the matter is, that the dropsy manifests itself after scarlatina, principally when the patients are not kept warm during convalescence, when they are exposed to the influence of a moist atmosphere. If our opinion does not appear divested of all probability, we would ask, in fine, whether one of the best means of preventing this appearance of the dropsy after scarlatina would not be to excite a moderate fluxion towards the intestines by means of purgatives, as was the practice of the ancients. These are conjectures which we submit to the consideration of practitioners.

We met seven cases of this kind at the La Charité. The patients were all young : some plethoric, and of strong constitutions ; others weak, and of a lymphatic temperament. The scarlatina no longer existed in any of them at the time of their entering the hospital, but in several of them the skin was still covered with broad scales of epidermis. Four of them told us that they were scarcely free from the fever, when they went out and exposed themselves to a cold air ; a fifth had inhabited, during his illness, a low moist room ; the two others had not been subjected to any of these mischievous influences. In all the dropsy had not begun to manifest itself till from six to ten days after the disappearance of the redness of the skin ; only one of them had been purged ; with three of them copious bleedings had been employed during the progress of the scarlatina. Sometimes the dropsy commenced in the face, sometimes in the lower extremities, sometimes in the abdomen. In two cases there was but anasarca ; in the five others there was anasarca and ascites at the same time. The termination was uniformly favourable, but it was a long time before the dropsy disappeared ; it lasted, on an average, from fifteen days to two months. Some were treated with purgatives continued for several successive days, so as to establish a permanent diarrhœa. Three of them were treated in this way ; in two of them nothing of any bad consequence occurred; on the contrary, the establishment and continuance of the intestinal flux seemed to contribute to the hastening of the absorption of the serous collections; but in the third, who was possessed no doubt of more acute sensibility, fever was lighted up, the tongue became red, the dropsy at the same time became very much increased. The purgatives having been suspended, all these symptoms soon ceased, and the dropsy left to itself, was absorbed. Three other patients were treated with diuretics. Several blisters were also applied to the lower extremities, and fumigations were employed several times a day with juniper baths. In fine, in another patient who was pale, weak, and as it were bloodless, bitters were principally employed, and particularly quinquina given alternately in the form of syrup, decoction, and extract. A sensible improvement in the strength and in the appearance of the countenance followed the employment of these remedies, and the absorption of the dropsy appeared one of the happy results. We should conclude from these different facts, that here, as on a thousand other occasions, the treatment cannot be uniform, that it must vary according to a great number of individual circumstances, which clinical experience alone can teach us to determine and appreciate.

We shall now cite some other cases of dropsy, in which pathological anatomy showed us no species of organic change which could account for it.

In several women labouring under cancer of the uterus, we observed during the last months of their life an infiltration of the entire subcutaneous cellular tissue. This anasarca set in gradually; it usually made its first appearance either towards the lower part of the legs, or in the hands, or in the face. On examining the body, we found in no organ any appreciable change to which the leucophlegmatic state could be referred.

A woman, twenty-four years of age, who had been confined eighteen months before, was affected with anasarca and ascites when she entered the La Charité. The first traces of this dropsy manifested themselves a little time after her confinement, and without the patient experiencing any pain either in the abdomen or elsewhere. This woman become gradually exhausted, and died the fourth month after her admission, without any symptom having ever announced in her a lesion of any organ. On opening the body, the peritoneal cavity was found filled with an enormous quantity of limpid serum, without the least admixture of flocculi, or any appearance of pseudo-membranes of either ancient or recent formation. *All the organs were found healthy.* One circumstance alone struck us—the almost complete absence of blood. Thus, not only the large arterial and venous trunks contained but a very small quantity of reddish liquid, but the tissues also, such as the intestine, the liver, and the lungs, which are ordinarily found engorged, and where the principal part of the blood appears to be accumulated during the last struggle, or immediately after death, these tissues, I say, or these organs were entirely colourless and *bloodless.*

In another woman, fifty years of age, there was anasarca and ascites for the last fifteen months, when she entered the hospital. Neither did this patient present symptoms of a local affection any more than the preceding; like her, she pined away gradually and died. Neither was there any lesion found here which could be regarded as the cause of the ascites. All the organs were healthy, except the stomach, the mucous membrane of which was very much softened towards the great cul-de-sac.

A man, twenty-two years of age, who usually resided in the country, had enjoyed good health up to the April of 1821. Then without any known cause, without pain, his abdomen became considerably increased in size, it went on increasing very much during the following months, and at the same time the lower extremities became œdematous. Towards the end of July, subsequently to the spontaneous establishment of an abundant diarrhœa, the patient told us that his abdomen all at once became diminished, and the infiltration of his limbs disappeared. But in a short time, notwithstanding the continuance of the diarrhœa, the *swelling* reappeared as much as before; up to the end of October he had diarrhœa, and his debility was constantly increasing. The patient entered the hospital the beginning of the month of November, 1821. At that time his countenance was pale and puffed; the abdomen, completely free from pain, was the seat of an evident fluctuation, and the lower extremities were very œdematous. The breathing was free; the chest, when percussed, sounded well in every part; auscultation pointed out nothing unusual either in the respiratory murmur, or in the pulsations of the heart; the pulse was small and a little frequent; skin not hot. The patient usually had from eight to ten stools every twenty-four hours, consisting of a substance resembling colourless water a little turbid, which was neither preceded nor accompanied by any sort of pain. He complained of being always cold. The urine was very scanty, and still *aqueous, limpid*, and *free from deposit.*

Four or five days after the patient's admission, 10th November, incisions were made in both thighs; a considerable quantity of serum flowed from them. The purging still continued. On the 11th and 12th, a glass of the decoction of catechu was ordered to be added to his drink, and juniper fumigations. On the night of the 12th, a considerable increase in the purging. On the 13th, there was painful redness around the incisions. On the 14th, the right thigh became the seat of considerable erysipelatous inflammation, which affected all the upper and inner side of it. The pain felt by the patient in this part was so severe as to force him to scream. An attempt was made to moderate the purging by a starch lavement, with the addition of two drachms of diascordium and twelve drops of Rousseau's laudanum. The evacuations were less frequent during the twenty-four hours following. On the 15th, the erysipelas spread; the entire thigh was hard and painful. The bursæ were very much swollen from the preceding day. Pulse very frequent and small, skin hot.

Nov. 16. The purging returned as severe as before; the skin of the right thigh and of the scrotum of a cherry-red colour; tongue dry; countenance very much changed; despondence.

17th. Broad eschar on the inner and upper part of the thigh, around it a brown redness of the skin. The erysipelas extended to the anterior part of the abdomen, from the right thigh to the level of the crest of the os ilium. Internally it terminated abruptly at the linea alba. The infiltration of the face was gone, the features were very much changed. The patient was anxious for his dissolution, which he considered as near at hand; his intelligence was intact; his breathing not more than ordinarily embarrassed; the pulse very small and extremely frequent. In the course of the day the patient became more and more exhausted, and died on the 18th.

Post mortem. The brain and its appendages remarkably pale. Lungs of a yellowish white. Heart and its appendages, which presented all the conditions of their physiological state, contained but very little blood; the substance of the heart pale. Peritoneum filled with an enormous quantity of lemon-coloured serum perfectly limpid; no trace whatever of previous peritonitis. The intestines externally void of colour, seem, as it were, washed in serum; mucous membrane of the stomach pale and thin; all the internal surface of the intestine remarkably pale, except at the end of the transverse colon, and in the descending colon, where there was a vascular arborisation seated in the mucous membrane. Liver not large, and without colour. Spleen small and firm. Veins remarkable for the extreme paleness of their tissue. The different muscles were also colourless and, as it were, wasted.

This case is remarkable in more than one respect. First it affords us the example of a dropsy of long standing, which could not be referred to the appreciable alteration of any organ.

What seems to us no less worthy of consideration, is the very small quantity of blood found in the dead body. We do not here allude to the empty state of the heart and of the large vessels, that being a thing of ordinary occurrence, but the capillary vessels of the different parts of the body, of the brain, lungs, liver, kidneys, intestines, of the parenchyma of the heart, of the substance of the muscles, were equally empty; in a word, it might be said to be the body of a person who died of hemorrhage. There really was no blood but in two places:—1st, in some vessels of the mucous membrane of a small part of the colon; 2ndly, in the skin of the right thigh, where the erysipelas appeared. Thus, then, we here again find the same coincidence as we already remarked above, between a considerable diminution in the mass of blood, and the existence of what is called essential dropsy. A popular saying has consecrated the belief that, in dropsical subjects, the *blood is turned into water.* This is essentially false in a great number of cases, since there are some dropsies whose existence is connected with a too great quantity of blood, as is the case in many diseases of the heart. But here the case is certainly different: first, the liquids which are formed from the blood, the bile and urine in particular, appear to be secreted but in extremely small quantity; there is nothing even to prove that bile is produced; if, again, there is blood in the different tissues, it is at least certain that this blood is in a particular state; that it is deprived of its colouring matter, and that if it still contain fibrine, the latter substance has lost the property of coagulating, and that it is dissolved in the superabundant serum which is everywhere the predominant chemical constituent.

We have dwelt on these facts, because they seem to us of the greatest importance in a therapeutical point of view. If it can be demonstrated, that in a certain number of cases there is really a connexion between the state of the blood and the formation of several dropsies, it follows that the treatment should be directed to bring back the blood to its natural state: such should be the indication: it would then be for experience to decide whether this indication can be fulfilled. It would, in fact, be necessary to remake the blood, if we may be allowed to say so; but that would be to fall into *humorism.* What matters it, if facts lead us to it?*

Another remarkable circumstance in this case is the very slight alteration presented by the intestinal mucous membrane in an individual affected for a long time with severe diarrhœa. Did it not appear, that in this case, there was transudation of serum on the internal surface of the intestines, as took place in the areolæ of the cellular tissue, and in the cavity of the peritoneum?

In a word, in the midst of this state of anemia, a sanguineous congestion nevertheless took place in the part, where incisions having been made to give exit to the serum, caused a slight irritation; a proof, among a thousand others, that the production of inflammation does not depend on a state of plethora, and that in more than one case, as has been already said, when there even remained but a single drop of blood in the system, it flowed towards the irritated point. It may be here observed, en passant, that this is one of the great objections, which may be made to the method generally adopted in France, which consists in combatting every inflammatory process merely by blood-letting more or less copious. It is very certain, however, that if by this means a momentary disgorgement be effected in the inflamed part, we do not at all destroy in any way the unknown cause, under whose influence the blood subtracted from the ordinary laws of the circulation, tends to accumulate incessantly in the part where the process of inflammation exists.

---

* At the time I wrote these cases, every thing, which tended to fix the attention on the part performed by the blood in the production of disease, still seemed a strange paradox. Since that time we have progressed, and facts similar to that which inspired these reflections in 1825, have been often cited and interpreted in the same way. These facts now seem to have become more general, because new theories have directed the researches of observers to that channel.

What must not be lost sight of is, that in our patient, the erysipelas had scarcely commenced, when the skin, which was the seat of it, became brown and gangrenous.

In the different cases which we have cited, the serous congestions had lasted several months before they were followed by death, and were developed only by degrees. Here was another case in which the dropsy, equally essential, in as much as no organic change could account for it, assumed a much more acute progress. Further, the pleuræ in this case having become the seat of a double serous congestion, the result was rapid death, in consequence of the constantly increasing embarrassment of the respiration.

A girl, twenty years of age, entered the hospital (in the autumn of 1825) in the following state :—considerable puffiness of the face ; infiltration of the cellular tissue of all the surface of the body ; ascites ascertained by the size of the abdomen and by fluctuation. Lies on her back. Respiration short and hurried. The œdema of the parietes of the thorax renders quite unavailing the information which might be afforded by percussion ; but posteriorly on the right, nearly on a level with the inferior angle of the scapula, we heard in a very marked manner, 1st, the bronchial respiration without the admixture of any râle ; 2nd, the œgophony, or at least a resonance, a peculiar trembling of the voice, which exists in no other part. Nothing indicates a morbid state of the heart. Pulse also natural. This girl assures us that she has been ill but for the last fifteen days : she remarked that her face and limbs became swollen without any known cause ; by degrees this *swelling*, at first sight, became more and more considerable. She felt her breathing embarrassed but for the four or five last days. (Blisters to the legs, stimulating frictions on the extremities ; diuretic drinks.)

During the three weeks following, the state of the patient underwent no kind of change ; then the dyspnœa increased all at once in a very perceptible manner, and *we recognised posteriorly on the left as well as on the right bronchial respiration and œgophony.* However, the dyspnœa increased, and the patient soon died in a state of asphyxia, having retained the use of her intellects up to the last moments.

The post mortem examination proved the existence of a considerable effusion of serum into each of the pleuræ ; nothing else announced that these membranes had been the seat of any inflammatory process. The pulmonary parenchyma, compressed by the effusion, was sound. The heart presented no appreciable alteration ; the vessels which enter it, as well as those arising from it, were in their normal state. A considerable quantity of black blood was found in the large veins.

In the abdomen, the peritoneum contained some limpid serum, without any trace of inflammation. The liver, spleen, and pancreas appeared quite sound. There was nothing remarkable in the digestive tube, except a considerable development of the mucous follicles at the end of the small intestine, which exhibited the appearance of small whitish granulations. But there was another organ which presented a change, which must not be lost sight of : that organ was the kidneys, of which the external cortical and part of the tubular substance consisted merely of a whitish granular tissue, divided into small masses or grains, which were separated by the remains of the reddish tissue natural to the kidney. In several points, however, some cones of the tubular and mamillated substance were observed to be still intact. Did this particular alteration of the kidneys cause any obstacle to the free secretion of the urine, and consequently contribute more or less directly to the production of dropsy*? Be that as it may, this was the only species of lesion revealed to us by the post mortem examination. But if the cause of the disease is here at least very obscure, the cause of death is on the contrary sufficiently evident, it being evidently owing to the double hydrothorax.

---

* I have developed this point of doctrine, when treating of *hyperemia*, in my *Pathological Anatomy*.

The different facts now cited prove then, that there may be dropsies which recognise other causes than an inflammatory process, or a mechanical obstacle to the circulation.

ARTICLE IV.

LESIONS OF THE HEART DISCOVERED BY AUSCULTATION.

29. We shall here follow the beautiful division pointed out by Laennec, which consists, as every one knows, in studying, by auscultation, the beats of the heart with respect to their impulsion, their sound, their extent, and their rhythm.

The impulse communicated to the cylinder by the pulsations of the heart, is most frequently limited to the precordial region. However, we have more than once ascertained its existence, either at the base of the sternum, or even in the epigastrium, and as far as the umbilicus. This impulse does not always remain uniform with respect to its intensity, or the points where it takes place. A blacksmith, twenty-eight years of age, was subject for several years to frequent palpitations; when he entered the La Charité, the epigastrium was observed to be forcibly raised at each beat of the heart; the cylinder, applied over this region, was repelled during each contraction of the heart, so that the head of the observer was raised several lines each time, which raising was visible at the distance of several feet. A strong impulsion also existed at the lower part of the sternum and in the precordial region; the pulsations of the heart were heard, moreover, in all parts of the thorax. These phenomena continued for several days; then the impulse at the epigastrium lessened first, and afterwards was no longer perceptible; it became even much less marked in the region of the heart. It is to be observed that the pulse, which was extremely small and irregular, as long as the pulsations of the heart gave considerable impulsion, became stronger and more regular, according as this impulsion became weaker, and was circumscribed to the precordial region.

What sort of lesion is indicated by the impulsion communicated to the cylinder by the beats of the heart? We have very frequently ascertained that, as M. Laennec has stated, the existence of this impulsion is connected with hypertrophy of one or more of the heart's cavities; but, on the other hand, every hypertrophy of the heart does not necessarily produce it. More than once, in cases where after death we found the parietes of the ventricles very much thickened, at the same time that their cavities were considerably enlarged, we detected during life no species of impulsion. In other cases, where there was simple hypertrophy of the left ventricle, with great diminution of its cavity (the concentric hypertrophy of MM. Bertin and Bouillaud), there was no appreciable impulsion. It seems then, that in order that the latter may be produced, it is not only necessary that the parietes of the heart should be increased in thickness, it is also necessary that their fibres should contract with a certain degree of energy; now, the latter condition does not result necessarily and solely from the increase in the thickness of the muscle, as we have already mentioned. This is so true, that mere palpitations in nervous or plethoric individuals, palpitations which are independent of all organic lesion of the heart, sometimes, however, give rise to a strong impulsion, which ceases with the palpitations. Still more, there are even cases of real hypertrophy, in which the impulsion shows itself only at intervals more or less distant, either without any appreciable cause, or under the influence of an irregularity of diet, stimulating medicines unseasonably administered, the attack of an acute inflammation of any organ, unusual exercise, some mental emotion, &c.

---

* The state of the kidney, noticed in this case, has been described since the publication of the first edition of this work, under the name of granulations of the kidney, by Dr. Bright, an English physician who, more positively than I did then, considers this state as the cause of a certain number of dropsies.

In certain individuals labouring under an organic affection of the heart, there is heard, either in the precordial region, or at the lower part of the sternum, a particular sound, the different varieties of which have been designated and described under the name of bruit de soufflet, or bruit de râpe. The frequent existence of this sound cannot be questioned ; but what does it indicate? It is quite certain, that in a number of cases its existence coincides with that of an obstacle to the free passage of the blood through the different orifices of the heart. According to the place where this sound is heard, and the moment of the heart's contraction at which it is perceptible, the precise seat of the obstacle may sometimes even be assigned. But, on the other hand, on more occasions than one, we have heard no trace of a bruit de soufflet, in cases where some one of the orifices of the heart presented a narrowing almost similar to that which we found under other circumstances, where a very manifest bruit de soufflet had been heard during life ; at other times, again, the orifices of the heart were in their normal state, and yet the bruit de soufflet was heard. Thus, it was very well marked in a case where we found no other lesion in the heart than a hypertrophy of the left ventricle, with extreme smallness of its cavity. In another person the cavity of the ventricle was, on the contrary, dilated. In another, where a well-marked bruit de soufflet existed equally in the precordial region and towards the lower part of the sternum, the heart had acquired an enormous size. The parietes of the left ventricle were thickened, and its cavity so enlarged that it might have admitted a pullet's egg. The left auricle presented nothing remarkable. The auriculo-ventricular orifice of this side had its ordinary diameter, and presented no lesion in other respects. The aortic orifice was equally exempt from all alteration ; cartilaginous patches were beginning to be deposited towards the arch of the aorta. The ventricle and auricle of the right side were considerably dilated ; the parietes of the ventricle were become thin. The orifices of this side were in other respects perfectly free. A great quantity of blood filled the four cavities of the heart.

Thus, then, the existence of the different degrees of the bruit de soufflet is not necessarily connected with the existence of an obstacle to one of the orifices of the heart, since on the one hand this bruit exists without any obstacle, and on the other hand, it does not always take place when an obstacle does exist. Even when this sound does manifest itself, it is not heard constantly and uniformly ; oftentimes, for example, being very well marked at the time the patients enter the hospital, when the disturbance of the circulation is very great and the dyspnœa considerable, it then becomes less perceptible, and subsequently disappears altogether.

What are we to conclude from these different facts? It is, that the production of the bruit de soufflet depends most frequently on the union of several conditions. The first of these conditions seems to us to be a quantity of blood, more considerable than usual, which in a given time passes the orifices of the heart ; we have even sometimes heard the bruit de soufflet in plethoric individuals, who in other respects presented no sign of organic affection of the heart ; some women of sanguineous temperament present it in a very marked manner on the return of each menstrual period. This being laid down, we may conceive that this bruit de soufflet should be more easily produced in the case where either ossification, or any other cause, narrows one of the orifices of the heart; but we may also conceive how, even in this case, the sound may diminish or disappear under the influence of rest, diet, or after removing a certain quantity of blood. If, notwithstanding these means, the bruit de soufflet continue, if it resemble the sound produced by the action of a rasp, it may then be concluded that there is a real narrowing of one of the orifices of the heart, occasioned probably by considerable ossification. We have never heard the bruit de râpe, properly so called, except at the precordial region, whilst the different degrees of the bruit de soufflet are heard with nearly equal frequency on the right and left, which corresponds with the much more common existence of ossifications on the left than on the right.

It is not only in the heart that the species of bruit de soufflet now mentioned is heard. A sound more or less analogous is sometimes heard in the different arteries during their dilatation, or, in other words, every time they receive a new supply of blood from the heart; we shall cite two cases of this kind, wherein there shall be found some of the signs which have been considered in later times as connected with arteritis. (Bertin and Bouillaud.)

A man, forty-seven years of age, experienced for the last fifteen months an habitual pain in the back, between the two shoulders, and along the vertebral column as far as the sacrum: at other times it extended to the extremities; and at last, at intervals, when the dorsal pain was severe, the epigastrium likewise became painful. During the two months previous to the entrance of this patient into the La Charité, the pains were acute, and he often had attacks of dizziness. When he was submitted to our examination, the state of the circulating system particularly engaged our attention; the cylinder, being applied over the region of the heart, was slightly repelled; but further in this same region there was heard a well-marked bruit de soufflet, which appeared to follow immediately each contraction of the ventricles; but this sound was not confined to the heart; it was also heard very distinctly, 1st, in the epigastrium, along the median line from the xiphoid cartilage to the umbilicus; 2nd, all along the cartilages of the ribs on the right side; 3rd, along the course of the two primitive carotids, which at their lower part presented to the hand a very loud bruissement, and to the eye pulsations very energetic; 4th, this same bruit de soufflet was again heard, but more feeble, posteriorly along the vertebral column, particularly towards the middle of the dorsal region; the pulse was hard, and vibrating. The patient, however, felt no oppression; he could lie on his back, and indifferently in all positions; he never had any appearance of dropsy; the respiratory murmur was every where strong and distinct. This person remained but ten days in the hospital, and left it in the same state as when he entered.

What was particularly remarkable in this individual was, that this extraordinary bruissement, occasioned by the large arterial trunks, as well as that which existed in the region of the heart itself, did not coincide with any other of the ordinary symptoms of the organic affections of the heart; in the following cases, on the contrary, we shall find a similar bruit in the arteries, coinciding with dyspnœa and a commencement of dropsy.

A young English servant girl felt acute pains in the two knees, with swelling of those parts, towards the end of the winter of 1822. After having continued for some time, these pains disappeared, and were succeeded by a particular feeling of constriction in the precordial region, with considerable dyspnœa. She then entered the La Charité, and presented the following symptoms: lying in the horizontal position very painful, in consequence of the great dyspnœa which results from it; respiration short and hurried; speech panting; pulsations of the heart heard with impulsion and a well-marked bruit de soufflet, 1st, in the precordial region; 2nd, at the lower part of the sternum, and in the epigastrium. On applying the cylinder all along the back, over all the posterior part of the thorax on the left side, and over the carotids, the same bruit de soufflet was heard as in the region of the heart; pulse frequent, regular, and vibrating. The eight days following, the same signs were afforded by auscultation, increase of the dyspnœa, which became so severe as to cause us to fear lest the patient may be suffocated; œdema of the lower extremities. (Copious bleedings, sinapisms and blisters applied alternately over different parts of the body, &c.) In consequence of the constantly increasing intensity of the symptoms, the prognosis became more and more unfavourable; however, the bruit de soufflet of the arteries and heart became less marked, then ceased altogether; the impulsion communicated to the stethoscope by the pulsations of the heart was also considerably diminished, and was no longer perceptible at the epigastrium; at the same time the embarrassment of the circulation became less; she could now lie in the horizontal position; the infiltration of the lower extremities disappeared. About six weeks after her admission this young patient presented no other morbid phenomenon than a little dyspnœa, and a slight impulsion in the precordial region; she left us in that state.

Three years after, during the summer of 1825, this woman again came to the hospital. Since her leaving it she had enjoyed, she told us, tolerable health, and only a few days before her return to the hospital she was seized with the same series of symptoms as in 1822. The bruit de soufflet was very manifest at the heart, along the sternum, in the epigastrium, in the back, and along the carotids. The dyspnœa was less than on the former occasion. These different symptoms continued for some time, when the patient went out again in good health.

On what species of lesion did the remarkable symptoms depend, experienced by the two individuals, whose cases we have now related? Here many conjectures might be made, without our arriving at any thing positive; we prefer to leave these facts to the consideration of medical men, without attempting to establish their diagnosis.

There is often a well-marked difference between the two sides of the heart, with respect to the impulsion which accompanies its contractions, and in reference to the sound which is heard; thus, the existence of either of these phenomena in the precordial region, at the lower part of the sternum, or even in the epigastrium, often points out with precision whether the organic lesion is seated in the right or left cavities. This becomes more particularly remarkable, when the heart is scarcely heard in the precordial region, whilst its pulsations are heard with a sound and impulsion on a level with the last piece of the sternum, and towards the xiphoid cartilage, where in the physiological state they are scarcely perceptible. One of the most marked cases of this kind which we have have had an opportunity of observing, was that of an individual in whom the heart presented no other lesion than an enormous dilatation of the right auricle, with slight hypertrophy of its parietes. The hand applied over different parts of the thorax detected nothing unusual in the pulsations of the heart; when examined by auscultation, these pulsations presented nothing anormal in the precordial region; they were not heard under the left clavicle; but towards the lower part of the sternum each contraction of the heart, more perceptible than in any other part, enabled us to hear a peculiar sound very like that of a valve.

The rhythm of the heart's pulsations, as every body knows, oftentimes loses its regularity in the organic affections of this viscus. What is denoted by this irregularity, which sometimes affects the strength, sometimes the return of the pulsations? Does it always denote, as many persons think, the existence of an obstacle at one of the orifices of the heart? Let us first remark, that in several cases of pericarditis, also, the heart presents very irregular pulsations, and that still there is no obstacle at the orifice of this organ. Let us not forget that during a crowd of diseases, in those particularly where the action of the nervous centres is more or less modified, the heart equally presents irregularities and well-marked intermissions. From these facts we may conclude, *a priori,* that in cases where the heart's nutrition is deranged from its normal state, this sole circumstance may, as well as those just now mentioned, account for its irregular contractions: that becomes much more probable, if we recollect that the different alterations of nutrition in the fleshy substance of the heart often coincide with an irritation, either acute or chronic, of the internal membrane, the influence of which on the muscle which it lines must be more or less similar to that of the pericardium. In fine, we may conceive how, in consequence of the single circumstance of blood flowing into cavities which no longer have the proportions assigned them by nature to enable them to expel in a given time as much blood as they receive, the contraction of the parietes of these cavities may be modified, embarrassed, alternately retarded or hurried, and thus become more or less irregular.

This is what reasoning founded on analogy may induce us to suppose: let us now see what information facts afford us.

First, there are cases where, though after death no obstacle is found at the orifices of the heart, the pulsations of this organ have, however, presented great irregularity. But then it may be remarked, that this irregularity does not always exist; it manifests itself at intervals more or less distant, when under the influence of any cause whatever the contractions of the heart are hurried and the dyspnœa increases.

In other individuals there is an obstacle at one of the orifices large enough to impede the passage of the blood: thus, for instance, the aortic valves being ossified, and being thereby rendered in a great measure immoveable, there remains between them but a narrow orifice through which all the blood is to pass, which is continually projected from the left ventricle into the aorta, and still the pulsations of the heart have not been irregular, or at least they have become so only at intervals or towards the termination of life.

At other times, in a word, and this is the most common case, the irregularity of the heart's pulsations is directly proportioned to the size of the obstacles which exist at the different orifices; usually, in this case, there is heard at the same time a more or less marked bruit de soufflet, de lime, or bruit de râpe.

Under some circumstances we have ascertained very marked intermissions in individuals, the orifices of whose heart were exempt from every obstacle, the heart itself being at the same time aneurismatic, but in whom the ascending thoracic aorta was traversed on its internal surface, either with ulcerations, or particularly with cartilaginous or bony inequalities. In this case, were the intermissions of the contractions of the heart independent of the morbid state of the aorta, or were they connected with the diminished elasticity of the fibrous tunic of the vessel?

It follows from these facts, that the existence of pulsations of the heart, irregular with respect to their strength or their return, may cause one to suspect the existence of a greater or less obstacle at one of the orifices, but cannot afford us complete certainty of it: there will be, however, a strong presumption in favour of the existence of this obstacle if the irregularity of the pulsations be constant, and particularly if it takes place before the organic affection of the heart has yet assumed a serious character.

With respect to the extent of the heart's pulsations, they have appeared to us to be in general proportioned to the size of this organ, and particularly to the dilatation of its cavities. Here, however, we must again remark, that in a considerable number of cases, where the post mortem examination presented us an enormous heart, the extraordinary size of which was caused at one and the same time by hypertrophy of the parietes and dilatation of the cavities, the pulsations of the heart were heard only in a very circumscribed space, either merely towards the precordial reigon, or in this region, at the lower part of the sternum, and under the left clavicle.

From the different facts recorded in this article, we shall draw the following consequences with respect to the utility of auscultation in the diagnosis of organic affections of the heart.

There are some cases where auscultation furnishes signs which may powerfully contribute to establish this diagnosis ; however, in order that these signs may have real value, they must combine certain conditions : they must be permanent, and more than that, they must be joined to other signs ; for we lay it down as a principle, that there is not one of the signs furnished by the consideration of the heart's pulsations, of their sound, their rhythm, and their extent, which may not show itself, though the heart may be free from all organic lesion, under the influence either of acute pericarditis (see the article on this affection), or of a state of plethora, or of a modification of the nervous influx. The signs derived from auscultation, as all other signs in general, become then really characteristic, and acquire a true value only as far as regard is had—1st, to the period and mode of their appearance ; 2nd, to the different morbid phenomena which have preceded, or which accompany them.

We have seen that the different signs furnished by auscultation to detect an organic affection of the heart, may develope themselves though this affection does not exist. But, on the other hand, it is no less certain that this affection may be very severe, and yet may not be detected by auscultation.

We consider it as an indubitable fact that, in several cases where the heart has acquired considerable size, or its cavities are very much enlarged, the ear applied over the precordial region, and over the other points of the thorax, hears nothing unusual in the pulsations of the heart, and even hears them less than in the physiological state. Here, again, two classes of patients may be established. Some at the time of their entering the hospital, present in the precordial region, or elsewhere, pulsations unusual with respect to their strength, their sound, their rhythm, &c. But under the influence of a rational treatment, and particularly of repose, a primary condition of success in this treatment, the signs furnished by auscultation become less and less perceptible, and at last entirely disappear. Other patients have never presented any of these signs, except perhaps transiently, when they were affected with palpitation. Thus, then, it would be extremely wrong to deny the existence of an organic disease of the heart, because it is not actually disclosed by any local sign, and particularly by the signs furnished by auscultation, for the latter may never have existed or may have disappeared.

To sum up, the method of auscultation has no doubt thrown great light on the diagnosis of diseases of the heart ; it often gives useful and valuable information, and we never should neglect to have recourse to it. But alone, and unaided by other signs, it can but seldom discover with certainty the existence of these diseases, no more than it can, in a very great number of cases, discover of itself the existence of tubercles of the lung, or even of an acute inflammation of this organ. Certainly nothing can be farther from our thoughts than a wish to depreciate the method of auscultation, one of the most splendid and ingenious discoveries which have been made in medicine for a long time. On the contrary, we are endeavouring to render it more useful and of more practical application by not exaggerating its advantages, and by pointing out with precision what may be expected from it.

SECOND BOOK.

DISEASES OF THE LUNG.

FIRST SECTION.

DISEASES OF THE BRONCHI.

30. We do not intend to give here a complete description of these diseases; that would be a useless repetition of what is to be found every where. We would merely strive to call attention to some important points in the history of these diseases, which are sometimes so slight that they scarcely constitute a morbid state, whilst they sometimes equal in severity an acute pneumonia or a pulmonary phthisis. In a first article, we shall speak of the more or less remarkable lesions, excited in the parietes of the bronchi by acute or chronic inflammation. A second article shall be devoted to the exposition of the different changes, which the liquid, secreted by the mucous membrane, undergoes in quantity and quality.

We have adopted this division, because it will allow us to explain better a certain number of important symptoms, some of which are more particularly owing to an alteration of texture in the parietes of the bronchi, whilst others depend more particularly on the different modifications of the liquid which they supply.

CHAPTER I.

ORGANIC ALTERATIONS OF THE BRONCHI IN THE STATE OF INFLAMMATION—SYMPTOMS OF THESE ALTERATIONS.

31. When the bodies of persons are opened, who have died of any disease whatever, during which they were affected with a mild and recent bronchitis, there is found some redness in a circumscribed portion of the mucous membrane. This redness is particularly met towards the termination of the trachea, and in the first divisions of the bronchi. If the inflammation has been more intense, the redness extends to a greater number of tubes; it exists particularly in some of the smaller ramifications. It often happens that this redness is exactly limited to the bronchi of only one lobe; it is the bronchi of the upper lobe which appear to be more particularly disposed to become inflamed. The red colouring of the bronchi sometimes presents itself in the form of a fine injection, which seems to exist simultaneously both in the sub-mucous cellular tissue, and in the mucous membrane itself; sometimes vessels are no longer distinguished, but only a number of small red points, crowded together, and collected around each other; sometimes, in fine, there is observed a uniform red colour. In some, the redness goes on diminishing progressively from the large bronchi towards the small ones; in others, the reverse takes place. Oftentimes the redness exists only at intervals, in the form of bands or separate patches, which constitute, as it were, so many circumscribed inflammations, between which the mucous membrane is white and healthy; a form of inflammation similar to that so frequently observed in the intestines.

These differences in the extent and locality of the inflammation cause great differences in the symptoms. Confined to distant points of the mucous membrane, the inflammatory redness of the bronchi remains a slight affection, and cannot bring with it any dangerous consequence. The case is not the same however, when it has extended to a great portion of the respiratory tree ; then more serious consequences accompany it. The cough which it occasions is painful ; the sputa consist, at the period when the disease increases, of a viscid transparent substance, mixed occasionally with streaks of blood ; the oppression is often considerable ; the patients feel, in different parts of the chest, deep-seated pains, which, in certain cases, approach the surface, and might be mistaken for pleuritic pains : there exists at the same time intense febrile disturbance. Certainly, such a group of symptoms might readily impose on one for an inflammation of the pulmonary parenchyma. If the chest be percussed in such a case, it will be found, to be sure, that the sonorousness of its parietes has not undergone any change, which would not exclude the idea of a pneumonia in the third stage ; but if we auscultate, we shall find, in a great number of points of the thorax, sometimes all over it, a crepitating râle, similar to that which is also heard in pneumonia ; the reason is that in the two diseases the same cause produces it, namely, the presence within the finest of the bronchial ramifications of a viscid mucus, which is traversed by the air at each inspiration ; this same râle might also be very perceptible during the time of expiration.

The crepitating râle exists therefore in other diseases besides pneumonia : it equally belongs to inflammation of the bronchi, when the inflammation has extended to the capillary branches of these tubes. Most frequently this râle continues only as long as the very acute bronchitis is accompanied with fever. There are cases however, where after the latter has disappeared, the crepitating râle still continues, and thus it may last a very long time, even when the disease has become altogether chronic.

32. When the inflammation is chronic, the mucous membrane generally loses its bright redness ; it presents a livid, purple, brownish tint. In fine, what is very remarkable is, that in persons presenting all the symptoms of an inveterate chronic bronchitis, with puriform expectoration, we have found the mucous membrane of the air passages scarcely of a rose colour, or even perfectly white through all its extent. Bayle had already noted this fact in the 49th Case of his work, with respect to a case of chronic bronchitis which simulated phthisis : he states that the mucous membrane of the trachea and bronchi appeared healthy ; it was white and scarcely thickened. *This white state of the mucous membrane*, he adds, *is not rare in chronic pulmonary catarrh.* We should not, in our opinion, hence infer, that inflammation does not or did not exist. We found, in fact, this absence of redness in other organs where the existence of inflammation could not be doubted. Thus serous membranes filled with pus, and lined with false membranes, frequently present no change of colour, no appreciable alteration in their texture, which puts it out of doubt that there are tissues which may be inflamed without being reddened. The intestinal mucous membrane, though traversed with numerous ulcerations, often presents a remarkable paleness, either in the very place where these ulcerations exist, or in their intervals. More than once in individuals, whose urine was for a long time purulent, the mucous membrane of the calices and pelvis of the kidney, as also of the ureters, and bladder, has been found very white ; in these different affections of mucous tissues, an inflammatory process could not be called in question ; but whether by reason of its long standing, or in consequence of general debility, the inflammation appears to have left no other traces in the organ which was the seat of it, than a change in its secretion : thence very often result new therapeutic indications, as we shall show, when we come to consider the expectoration. The following case presents an instance of chronic bronchitis without redness of the mucous membrane.

CASE 1.—*Chronic bronchitis simulating pulmonary phthisis—Whiteness of the tracheo-bronchial mucous membrane.*

A locksmith, twenty-seven years of age, entered the La Charité during the month of December 1821. For the last two years this man had been tormented with a constant cough ; he had never spit blood. When we saw him, he was in a state of marasmus ; he expectorated sputa, formed of greenish, round patches, separated from each other, and floating in an abundant serum ; these sputa were inodorous, and appeared to the patient to have a saccharine taste. The respiration was a little short ; he could lie down in all positions ; the chest when percussed resounded equally well in all parts : some mucous râle was heard in different points ; there was no appearance of pectoriloquy ; the pulse which was free from frequency in the morning, became accelerated towards evening ; every night the patient prespired a little. The digestive functions presented nothing remarkable.

What diagnosis could be given here ? Auscultation informed us to be sure that there was no tubercular cavity ; but the aggregate of the other symptoms seemed to announce, that numerous tubercles, commencing to soften, existed in the lungs.

The marasmus, and debility increasing, and diarrhœa also supervening, together with disturbance of the intellects, the patient died in a half comatose state.

Post mortem. Seroso-purulent infiltration of the subarachnoid cellular tissue of the convexity of the hemispheres ; lateral ventricles distended with turbid serum.

Pulmonary parenchyma sound, slightly engorged. The internal surface of the larynx, trachea, and bronchi, traced as far as their smaller divisions, presented every where great paleness ; the mucous membrane exhibited no other appreciable alteration ; white fibrinous concretions distended the right cavities of the heart. The digestive canal, opened to its entire extent, presented no other lesion but a bright redness, scattered in patches over the great intestines.

If in this case the symptoms presented during life had not been known, and had the mucous membrane of the bronchi been examined without any previous information regarding the patient's state, it would have been unquestionably considered as very sound, and yet it was seriously affected ; it was, in consequence of its very important lesion, and of the vitiated secretion of which it was the seat, that the patient was brought, in the space of two years, to the last degree of marasmus, presenting all the rational symptoms of phthisis. Pathological anatomy is then sometimes insufficient to discover the morbid state of the organs. Let us never lose sight of these two great truths, that, on the one hand, necroscopic researches oftentimes disclose lesions of which the symptoms had not excited any suspicion, and that, on the other hand, these same symptoms do not permit us to doubt that an organ may be at times very seriously altered, though it may not appear so at the post mortem examination.

We again see in this case an additional proof of the difficulty of distinguishing a simple chronic bronchitis from a tubercular degenerescence of the lung. What can auscultation tell us in this case, except that there are no cavities ? Let us draw from it this conclusion, that as long as the existence of tubercles shall not be ascertained by the stethoscope, the return to health should not be deemed impossible, by the cessation of the bronchitis, which occasioned all the symptoms. It is against such an inflammation of the mucous membrane of the air passages, that a great number of hygienic and therapeutic means have often succeeded which, if directed against real phthisis, would certainly fail, or at most would merely retard for a little the progress of the evil.

33. The inflammatory softening of the bronchial mucous membrane is much more rare than that of the gastro-instestinal mucous membrane. We have seldom found it so marked, as that the membrane could be raised into a pulp ; it is very rare, too, to find this membrane ulcerated ; and in this respect it again

presents a disposition contrary to that of the gastro-intestinal mucous membrane. We have not detected ulcerations in the bronchi more than twice ; in one of these two cases there was at the same time a large ulcer in the trachea, a little above its bifurcation ; three small round ulcerations existed in the right bronchus, which results immediately from the division of the trachea : with respect to the lesion, this case resembles those detailed by M. Cayol, in his splendid work on tracheal phthisis. The symptoms had been those of a common chronic bronchitis. In the other case the trachea and first divisions of the bronchi presented but a slight redness, without any other lesion ; but in the smaller ramifications of the right side the redness became very intense, and the mucous membrane presented on its surface a great number of small ulcerations, all exactly circular, and of equal size. Their edges were livid, and were raised about half a line above the level of the bottom of the ulcer, scarcely large enough to admit the head of a good-sized pin. The person in whom this lesion was detected had an aneurism of the heart. During his stay in the hospital he was tormented with frequent and very painful fits of coughing ; his sputa were generally tinged with a little blood.

The frequency of ulcerations decreases from above downwards in the different portions of the mucous membrane of the air passages. Thus, ulcerated chronic laryngitis is common enough. It is not at all rare to find a part of the chordæ vocales stripped of mucous membrane, the thyro-arytenoid muscles and the cartilages exposed, to a greater or less extent, in persons who, affected with simple chronic bronchitis or pulmonary tubercles, had their voice for a long time hoarse or entirely destroyed. What is remarkable is, that in the great majority ot cases, these ulcerations exist only when there is at the same time inflammation of the lower parts of the mucous membrane of the air passages.

34. In the trachea ulcerations become less frequent than in the larynx ; they are generally small, and not at all numerous. Once, however, in a person whom we saw with M. Magendie, who considered the anatomical specimen so curious that he preserved it, we found the entire inner surface of the trachea really like a sieve (criblée), from its origin to a little above its bifurcation, in consequence of a number of ulcerations so multiplied and so crowded on each other, that they occupied more extent than the spaces interposed between them. The bronchi were red, but not ulcerated. The patient had complained during life of a continual sensation of heat rather than of real pain all along the entire course of the trachea ; each inspiration was accompanied with a remarkable hissing sound (sifflement), as if the air tube was compressed by some tumour.

Ulcerations of the trachea most frequently do not extend beyond the tissue of the mucous membrane ; their edge is formed by the latter, and their bottom by the subjacent fibrous tissue. Sometimes, however, the ulcer is deeper, all the parts situated beneath the mucous membrane are destroyed from without inwards, and the result of this may be a complete perforation of the parietes of the trachea. We possess two cases of this kind. In both the perforation took place at the posterior part of the trachea, in its cervical portion. In one of these cases the bottom of the ulcer was formed by the œsophagus, which was united by a dense, close cellular tissue to the circumference of the solution of continuity. In the other case there was double perforation of the trachea and œsophagus, so that there was a free communication between these two tubes. This case of tracheo-œsophageal fistula was indicated only by an inconsiderable difficulty of deglutition, and by a trifling cough every time the patient swallowed ; itself indicated that the obstacle to deglutition and the cause of the cough had their seat in the inferior middle part of the cervical region.

Perforation of the trachea, or of its first divisions, has been sometimes seen according to a course entirely the reverse of the preceding, to take place from without inwards ; besides the aneurismal tumours which often produce this sort of perforation, tubercular lymphatic ganglions also sometimes produce it. This lesion, of which we know no instance in the adult, is not very rare in children ;

which is owing, no doubt, to the greater frequency of the tubercular degenerescence of the lymphatic ganglions in the early period of life. These tubercular ganglions, according as they become soft, irritate the parietes of the trachea or bronchi with which they are in contact, and gradually cause their destruction from without inwards. The progressive course of this ulcerative inflammation may be followed in different subjects: thus, in some, we only find a close adhesion of the tubercular ganglions and tracheal or bronchial parietes, with redness of the latter, commencing destruction of the cartilages; in others, the cartilages no longer exist, the fibrous tunic has disappeared, and tubercular substance is found in immediate contact with the mucous membrane, which it pushes and raises before it. In fine, in an extreme degree, the mucous membrane is itself destroyed, and the tubercular matter, leaving the ganglion according as it softens, spreads over the air passages, from whence it is ejected by coughing. Tubercles developed in the bronchial ganglions may heal in this way in the same manner as tubercles seated in the subcutaneous ganglions. But, unfortunately, these tubercles of the bronchial ganglions very rarely exist without there being at the same time pulmonary tubercles.

These perforations of the parietes of the trachea very closely resemble the variety of intestinal perforation, which takes place as here from without inwards, and which is caused by sub-peritoneal tubercles.

Researches regarding the history of narrowing and obliteration of the bronchi.

The alterations pointed out in the preceding article are not the only ones presented by the mucous membrane of the bronchi, when it is attacked with acute or chronic inflammation; it may also become thickened, either in its entire extent or only in certain points. From this thickening, however inconsiderable it may be, there results a very important effect, that is, a diminution in the size of the cavities through which the air is to pass to enter from the trachea into the pulmonary vesicles. Now, the bronchi cannot be narrowed without the sound caused by the entrance of the air into these tubes being also changed; then there arises a peculiar râle, which in consequence of its seat and nature we call the dry bronchial râle, the two principal varieties of which were designated by Laennec by the names of râle sibilant and râle ronflant.

This râle is evidently owing to the circumstance of the air, in its way to the pulmonary vesicles, traversing tubes which are narrower than those which usually give passage to it; that is particularly the obvious cause of the sibilous râle. In its exit from the vesicles the air again finds the same obstacles to its free passage, which causes during expiration the same râles, scil. the râle sibilant and râle ronflant. There are even cases where they are heard only during expiration.

These râles exist habitually in a considerable number of persons affected with chronic bronchitis; the patients who present them have ordinarily a certain degree of dyspnœa, which from time to time assumes all at once a much greater intensity, and becomes changed into a real attack of asthma. If, during this increase of dyspnœa, the chest be examined with the stethoscope, it is found that the sibilous râle has become much more marked, and at the same time much more general; it again becomes weaker and more circumscribed, according as the oppression diminishes. There is no doubt but that in such circumstances the sudden increase of the dyspnœa depends on the increase of the habitual engorgement, of which the bronchial mucous membrane is habitually the seat; whence arises the diminution in the calibre of the bronchi, and consequent production of the sibilous râle. There are, in my opinion, several cases of asthma, which should be referred to thickening of the mucous membrane of the bronchi; in this case, the intensity of the dyspnœa is under the immediate dependence of the different degrees of engorgement of this membrane, and is equally variable with it.

In the cases now mentioned there exists an habitual state of inflammation of the bronchi, which becomes aggravated at intervals; but that is not the only case which may present itself. There are persons who ordinarily present no sign of bronchitis, who do not cough, who have no shortness of breath, and who at certain intervals, are suddenly seized with the following symptoms: oppression, which rapidly becomes most intense; imminent suffocation; violet injection of the face, as in persons in a state of asphyxia; pulse, small, hard, and rather frequent; cough at first dry, but afterwards accompanied with a copious expectoration, the appearance of which coincides with the dyspnœa. These different symptoms set in suddenly; they very quickly attain their highest degree of intensity; then they diminish, and at the end of a few days they disappear, without leaving any trace behind them. What is the cause of this frightful dyspnœa, which thus seizes an individual in the midst of the most perfect health, which throws him all at once into unspeakable anguish, and threatens to kill him by asphyxia? Auscultation will explain it to us: it informs us, that from the moment the dyspnœa commences, there is heard in all points of the chest a general hissing sound (sifflement) which accompanies each inspiration, and which in certain cases is also heard in the larynx. In this latter organ, as in the large and small bronchi, the sudden appearance of the hissing respiration can be explained in no other way but by the equally sudden engorgement of the laryngo-bronchial mucous membrane: thence the fit of asthma. In proportion as the oppression becomes less, the hissing sound (sifflement) of the respiration also becomes less loud and less general; then, when the expectoration takes place, this hissing sound is succeeded by crepitating, sub-crepitating, and mucous râles. This latter continues for a longer or shorter time, then disappears, and nothing is heard but the natural sound of respiration. Bloodletting, both local and general, blisters applied on the chest and the extremities, repeated purgatives, antimonials, such are the means which have appeared to us to afford most relief under such circumstances. In more than one case, in particular, purgatives seemed to us to act more effectually than any other means; but it is on the condition of their producing copious evacuations. Amidst this scene the heart, to which one would be inclined to refer the symptoms, evidently performs either no part at all, or a very secondary one. There are several persons who complain of palpitations; but these do not open the scene; they only manifest themselves when the dyspnœa has attained a high degree of intensity, and when the hissing râle is heard over the entire chest. These palpitations seem to me in such cases to be the mechanical result of the temporary embarrassment of the pulmonary circulation; but it may be very easily conceived, that if this embarrassment is often reproduced, it may ultimately become modified in its texture, and at a later period become really diseased.

There is scarcely any period of life at which we have not observed the affection of which we have been endeavouring to give an idea, and which may not be inappropriately designated by the name of *bronchial asthma.* We are at present attending a child thirteen years of age, who, since the first period of life, has not passed a single year without being several times attacked with fits of this species of asthma. In the intervals there is nothing observed indicative of the morbid state of any organ in him. These fits often returned to him in consequence of exposure to cold, which brought on a slight cough; for two or three days he seemed merely to have a little cold, then an intense dyspnœa set in all at once with all the phenomena above mentioned. At other times the dyspnœa is not preceded by the appearance of any cold; it supervenes from the very first onset, and is the first phenomenon which appears. Oftentimes warning is given of the return of a fit, because in sleep, during the two or three nights preceding it, the respiration is accompanied with a sifflement, which disappears on awaking; this sifflement is heard at a distance, and for the purpose of perceiving it, it is not at all necessary to apply the ear over the chest.

The disease which approaches in its symptoms nearest to those now mentioned is unquestionably pulmonary emphysema, but in the latter the difficulty of breathing is constant, it only increases at intervals ; the extreme sonorousness of the thoracic parietes also, the sensible diminution of the respiratory murmur in the points where this great sonorousness exists, the frequent change of form in the chest in the points corresponding to the emphysema ; such are the signs, by means of which we may be able to distinguish the asthma, which depends on this affection from that which recognises for its cause a simple affection of the bronchi. Again, during the fits, whether they are occasioned by the first or second of these morbid states, the sibilous rhonchus is equally heard, either pure or mixed with other dry or moist rhonchi ; it must then be admitted that, in pulmonary emphysema itself, one of the causes of the return of the fits of asthma is the tumefaction which momentarily affects the mucous membrane of the bronchi, most frequently after a new cold contracted by the patient.

35. Thickening of the mucous membrane is one of the changes which chronic bronchitis most frequently produces. According to its different degrees, this thickening gives rise to different symptoms : it modifies the sound occasioned by the entrance of the air into the bronchi ; the result is a particular râle, which we shall call bronchial râle (râle ronflant of Laennec). The numerous varieties of this râle, and the cause, have been so well pointed out by him, that it would be needless to recur to it here. This râle is also characteristic of chronic bronchitis.

The thickening of the mucous membrane may be sufficiently extensive in one or more tubes to narrow their cavity very much, and even to obliterate it altogether. The result is a number of particular phenomena, which we shall now point out.

Case 2.—*Chronic bronchitis—Narrowing of the principal bronchus of the upper lobe of the right lung—Almost entire absence of the respiratory murmur in this lobe.*

A toy-man, thirty-one years of age, entered the hospital on the 31st of July, 1822. He then presented the symptoms of an organic disease of the heart. The respiration, when examined, was heard posteriorly very loud and distinct, with a mixture of a mucous râle in several points. Anteriorly, and on the left, it was also heard with an intensity proportioned to the embarrassment of the respiration. On the right, on the contrary, under the clavicle, the inspiratory murmur, distinct as on the left, was much weaker. Percussion could not afford any exact information by reason of the infiltration of the thoracic parietes* ; however, the sound was not duller on the right than on the left. We were inclined, in consequence of these signs, to suspect the existence of an emphysema of the upper lobe of the right lung. On the following days auscultation afforded the same information. The patient said he had experienced for a long time back a sort of *squeezing* a little above the right breast. He said that *he did not breathe on the right side of the chest.* Towards the middle of August the signs of a hydrothorax, consequent on the lesion of the heart, manifested themselves (dull sound and absence of the inspiratory murmur, particular trembling (che~~r~~otement) of the voice in the posterior and left part of the thorax). From this time the dyspnœa went on increasing, and death supervened on the 7th September.

Post mortem. The upper lobe of the right lung presented no trace of emphysema ; its tissue crepitated but little ; healthy in other respects. The principal bronchus of this lobe presented, a few lines from its origin, such a narrowing, that a fine stilette could scarcely pass the obstacle which existed in this point. A little before its division, the bronchus recovered its natural calibre. In the part where the narrowing existed, the fibrous membrane had preserved its ordinary appearance; but the mucous membrane was red and very much thickened. This partial thickening of the bronchial mucous membrane seemed entirely analogous to the circumscribed thickenings so frequently observed in the intestinal mucous membrane. In the remainder of this lobe the bronchi had their natural calibre. Nothing remarkable in the rest of the lungs. Effusion of about a pint and half of lemon-coloured serum into the left pleura. Hypertrophy of the parietes of the two ventricles, with dilatation of their cavities. Narrowing of the aorta. General redness of the digestive tube.

---

* This is one of the cases where the plessimetre of Dr. Piorry may be employed with much advantage with this instrument : it has happened to me more than once to discover on the two sides of the chest a difference of sonorousness, which my fingers, by striking on the infiltrated parietes, had not ascertained so accurately or distinctly.

The narrowing observed in one of the bronchi was owing merely to the thickening of the mucous membrane. The place where the narrowing existed accounts very well for the diminution of the respiratory murmur in all the upper part of the thorax. But this phenomenon, the mechanical result of several kinds of lesions, could not be regarded as a pathognomonic sign. We should remark the feeling of constriction, which was so marked in our patient on the side of the chest where the narrowing existed. With respect to the other sensation, which the patient expressed so well when he said that *he did not breathe on the right side of the chest*, it is not peculiar to the affection now in question. We have found the same sensation in other patients, into whose lungs any cause obstructed the free entrance of the air.

The thickening of the bronchial parietes has not always its seat exclusively in the mucous membrane. The cartilaginous and fibrous tissues placed outside this membrane may also undergo greater or less hypertrophy, and powerfully concur in the production of the narrowing. Here is an instance of it.

CASE 3.—*Chronic bronchitis—Thickening of the parietes of some bronchi with perceptible narrowing of their cavity—Pulmonary tubercles on the opposite side.*

A sempstress, twenty-six years of age, entered the La Charité in the September of 1822. At the age of eighteen she had caught cold, the effects of which had not ceased ever since. For the four first years this affection seemed to have no injurious influence on her health. About the age of twenty-two she began to feel a slight dyspnœa, and she had a copious hemoptysis. From this period the cough became frequent and more painful; she lost her flesh and strength, the oppression became greater, and during the two following years the spitting of blood frequently returned. From her twenty-fourth to her twenty-fifth year, nature seemed to make an effort towards a cure, or at least the symptoms above-mentioned made no progress. No hemoptysis took place, and the patient recovered a little strength. But at the end of this time, a very abundant hemoptysis re-appeared, and lasted for several weeks; from that time she wasted rapidly. She was admitted several times into different hospitals, but without ever experiencing any relief from the treatment adopted. When we saw her, she was in the last stage of marasmus. Auscultation detected under the left clavicle, and posteriorly on this same side, a well-marked gurgling in the supra-spinous and infra-spinous fossæ, a sure sign that tuberculous excavations existed in these parts. On the right side, in the space between the clavicle and breast, the ordinary respiratory murmur was replaced, in several parts, by a kind of well-marked snoring (ronflement). Everywhere else the respiration on this side was distinct and loud. Percussion detected a dull sound beneath the left clavicle. The patient said that from the commencement of what she called her *cold*, she had for a long time felt a sort of habitual and very painful heat to the right of the upper portion of the sternum. She died three weeks after her admission.

Post mortem. Immense caverns in the left lung, with grey hepatisation of the parenchyma around them. No tubercle in the right lung; its tissue seemed healthy. The bronchi of the two lungs were red. Those of the upper lobe of the right lung presented moreover the following peculiarities : the principal bronchus distributed through this lobe, had scarcely divided twice or thrice when its parietes acquired all at once an unusual thickness, and at the same time the diameter of the tube underwent a perceptible diminution. This diminution might be readily appreciated, by comparing the diameter presented by the same bronchi in the two lungs. Those of the left, which appeared to have retained their ordinary dimensions, presented a capacity three or four times as great. Some of the subsequent branches were observed to resume their usual calibre, then occasinally to become thickened and narrowed at the same time. Red patches in the stomach ; ulceration in the small intestine.

On viewing this case particularly with respect to the narrowing of the bronchi, we see that this narrowing was more general, but less considerable than in the subject of the second case. Thus the respiratory murmur was not here diminished ; but there was only heard a particular *rhonchus* in different points of the upper lobe of the right lung. The nature of the alteration explains this modification of the respiratory murmur.

This case, in other points of view, again possesses considerable interest. The sensation of heat which the patient said she experienced under the right clavicle for the last six years, indicated that since that time the inflammation had its seat more especially in the bronchi of the upper lobe of the right lung. However, no tubercle existed in the lung, whilst there was a great number of them in the left, where the bronchitis appeared to have been less severe.

We have observed in some other cases a narrowing of the bronchi nearly analogous to that now described, and attributable, like it, to a simultaneous hypertrophy of the different tunics. Sometimes we have heard, as in this case, different varieties of the dry bronchial râle in the place where the narrowing existed : sometimes, being less marked, it did not sensibly modify the respiratory murmur ; nor did it give rise to any particular symptom.

36. We shall now record a case in which the narrowing of the bronchi was the mechanical result of their compression by a tumour.

Case 4 —*Chronic bronchitis—Compression of the large bronchi of the right lung by a mass of encysted melanosis—Respiratory murmur weaker on the right side.*

An old man entered the La Charité in an advanced stage of emaciation ; he had a cough, and expectorated a considerable quantity of puriform sputa. By auscultation we ascertained that the respiratory murmur was very loud on the left, even *puerile,* whilst on the right it was much weaker. On the two sides, moreover, a mixture of the snoring and mucous râle was heard in different parts. The sonorousness was equal on the right and left. He had diarrhœa for a considerable time. He died a few days after his admission.

Post mortem. The root of the right lung was occupied by an enormous mass of melanosis, which seemed to have commenced in the bronchial ganglions, of which no trace could be detected. The bronchus arising immediately from the bifurcation of the trachea was included in this mass, and so compressed by it as scarcely to equal one-half the calibre of the principal bronchus of the other lung ; general redness of the bronchial mucous membrane ; ulceration in the large intestine.

In this individual, as in the subject of the second case, the narrowing of the bronchi, by preventing so great a quantity of air from entering at once into the lung, diminished the intensity of the respiratory murmur in it, which, on the contrary, was very loud on the opposite side, as if a compensation had been established between the two lungs with regard to the quantity of air received by each in a given time.

In children it is not uncommon to see the bronchi compressed and narrowed at their origin by masses of tuberculous ganglions. The same effects have also been seen to be produced by aneurisms of the aorta.

37. From the preceding cases it appears that no constant symptom announced a narrowing of the bronchi. Different symptoms present themselves in it, according to its seat, it extent, and especially according to its degrees. Thus it often exists without giving rise to any particular phenomenon. The rhonchus which it sometimes produces, the diminished intensity of the respiratory murmur, which, in other cases, is the consequence of it, are no doubt well-marked phenomena, but as resulting equally from a great number of different lesions, they cannot serve to establish the diagnosis of narrowing of the bronchi.

38. The bronchi affected with chronic inflammation sometimes undergo a kind of alteration opposite to the preceding; they become dilated in a greater or less portion of their extent.

It was only in latter times that dilatation of the bronchi was especially noticed by M. Laennec. His work on auscultation contains some valuable details of pathological anatomy on this subject. But at the time when Laennec published his researches, he possessed as yet but few facts on this subject, and it was only by a sort of *a priori* that he traced the symptoms of the dilatation of the bronchi, leaving to those who followed him the easy task of verifying his ideas. Since the writings of Laennec have directed the attention of medical men to dilatation of the bronchi, we have had several opportunities of observing it, and our own researches have fully confirmed the exactness of every thing said by Laennec on the subject. Every time the dilatation of the bronchi was considerable, it was announced to us by resonance of the voice resembling pectoriloquy more or less; in a less degree, signs sufficiently characteristic have equally led us to suspect its existence. In fine, in a still smaller degree, it was not announced by any particular symptom. In the following cases we shall find examples of these different shades.

Case 5.—*General chronic bronchitis—Dilatation of a single bronchial branch—Absence of characteristic symptoms of this dilatation—Cancer of the stomach.*

A slater, sixty-two years of age, had a cough for the last five or six years, when he entered the hospital in April, 1822. Besides, for the last two years he began to show some symptoms of an organic disease of the stomach. When we saw him he was already in an advanced stage of marasmus, the result of the gastric affection. He coughed frequently, and expectorated yellow thick sputa in great abundance. The chest, when percussed, sounded clearly in every part. When examined with the stethoscope, the respiration was heard on both sides with a mixture of the different bronchial râles. This man sunk under the disease of the stomach three weeks after his admission.

Post mortem. Pulmonary parenchyma healthy and crepitating, engorged in the posterior part; encysted calcareous concretion of the size of a hazel-nut towards the summit of the right lung. The bronchi of the two lungs presented numerous red patches on their inner surface. They were filled with a great quantity of mucus. In the middle lobe of the right lung we found a bronchus which equalled at least three times the diameter of that which preceded it, whilst in the healthy state it should be less than it. The tubes which arose from this dilated bronchus had their ordinary capacity. Cancer in the pyloric portion of the stomach. This dilatation, thus limited to one single lobe, appeared to exercise no influence, and was not indicated by any particular symptom.

Case 6.—*Chronic bronchitis with aneurism of the heart—General dilatation of the bronchi of one lobe—Peculiar resonance of the voice, and the respiration as it were blowing* (soufflante) *in this same lobe.*

A porter, sixty-six years of age, entered the La Charité in the beginning of

January, 1832. He then presented all the signs of an organic affection of the heart: orthopnœa, puffing of the face, anasarca, pulsations of the heart heard with slight impulsion in the precordial region and at the lower part of the sternum, distinct and loud under the two clavicles (hypertrophy of the ventricles with dilatation of their cavity). On auscultating the chest in the space comprised between the clavicle of the right side, and the breast of the same side, and posteriorly in the supra-spinous fossa, we found that in this extent the voice resounded much more than in any other part of the thorax, but it was rather a peculiar resonance than a real pectoriloquy. In this same extent, every time the patient inspired, one would have said that some one was blowing forcibly at the extremity of the cylinder applied to the chest; in every other part the sound of the respiration was natural, with a mixture however of mucous râle in several points. The patient soon died in the same way as aneurismatic patients usually die.

Post mortem. Lungs very much engorged with a colourless serous liquid, violet redness of the bronchi. On comparing the upper pulmonary lobes on the right and left, we ascertained a manifest dilatation in all the bronchi of the upper lobe of the right side; in whatever part the tissue of the lung was cut into, open bronchial orifices were met, nearly as large as the principal bronchus which ramified in this same lobe. The parietes of these tubes, considerably thickened, occasionally presented cartilaginous rings, as manifest and as hard as at the bifurcation of the trachea. In two or three points, the mucous membrane appeared slightly ulcerated. Hypertrophy of the two ventricles with dilatation of their cavities; cartilaginous patches in the aorta. General redness in the gastro-intestinal mucous membrane.

In this patient, the dilatation of the bronchi, more considerable and more superficial than in the preceding case, was announced by two well-marked symptoms, namely, great resonance of the voice, and the peculiar *souffle* of the inspiratory murmur.

CASE 8*.—*Chronic bronchitis—Dilatation of several bronchi—Pectoriloquy—Ulceration of the stomach.*

A periwig-maker, forty-six years of age, with brown skin, black hair, and well-formed chest, had been liable for several years to catch cold very readily. For the last year there was habitual oppression; towards the end of December 1821, there was hemoptysis for the first time. Dating from the February of 1822, the period at which he contracted a new cold, a copious expectoration set in, the sputa were puriform, and seemed to the patient intolerably fetid. In fine, for the eight days preceding his entering the hospital, he felt on the left side of the chest an acute pain, with which he was attacked for the first time after a severe wetting from rain. He kept his bed only for the last eight days.

When he entered the hospital in the latter end of March, there was orthopnœa; his countenance expressed intense anxiety. He expectorated without any exertion, and after a slight cough, yellowish, thick, nummular sputa, which floated on an abundance of serum. He had an acute pain over all the left side of the chest, which prevented us from employing percussion. The inspiratory murmur, then examined, was loud and clear on the right, much weaker on the left, both anteriorly and posteriorly. The voice resounded very much over all the left side; on this same side, anteriorly on a level with the breast, and posteriorly a little above the inferior angle of the scapula, there was evident pectoriloquy. Pulse not very frequent, the skin hot and dry. The digestive functions did not appear much disturbed.

From the aggregate of these symptoms, the diagnosis did not appear doubtful. M. Lerminier considered the patient to be labouring under pulmonary phthisis, the progress of which was slow. The nature of the sputa, the pectoriloquy, seemed to indicate that cavities were already formed. The acute symptoms which appeared for the last eight days, seemed the result of an inflammation of the left pleura; the almost total absence of the respiratory murmur on the left might be equally considered, either as the result of the pain which opposed the movement of the ribs of this side, or as the product of an effusion. (A blister over the left side of the thorax.)

---

* The 7th Case containing nothing very particular has been omitted.—Tr.

The beginning of April, the expectoration changed character. It was now a greyish liquid, which flowed in a continued stream, very fetid, and in great quantity. During the months of April and May, the patient became progressively weak. The pain of side continued; the pain prevented him from lying on the left side, and from the moment he placed himself on the right side, he was smothering. The sputa, still copious, became more and more fetid. Every evening the patient had a shivering, and a burning heat all night; but *he never perspired:* a circumstance which appeared to us remarkable, in a person whom we considered affected with pulmonary tubercles. In the morning, and during the day, the pulse was scarcely frequent. Towards the end of April, the patient began to experience the greatest disgust for every kind of food; the tongue, however, presented its natural appearance. There was neither vomiting, nor pain in the epigastrium. In the beginning of May, diarrhœa supervened; it appeared and disappeared alternately during all this month, and the first fifteen days of June. During his stay in the hospital, the patient took demulcents, Iceland moss, Morton's balsamic pills. The purging was met with the white decoction of Sydenham, decoction of catechu, pills consisting of alum and extract of rhatany. Blisters were applied several times, either over the thoracic parietes, or to the lower extremities. The beginning of June, the patient wasted away rapidly; he fell into a state of continual stupor, from which he could with difficulty be roused.. He died the 16th of June.

Post mortem, eighteen hours after death. Extreme degree of marasmus.

Cranium.—Considerable quantity of slightly turbid serum in the sub-arachnoid cellular tissue of the external surface of the cerebral hemispheres. A very small quantity of transparent colourless liquid in the ventricles.

Thorax.—Some albuminous, membraniform concretions, lined here and there the left pulmonary pleura. It was not adherent to the pleura costalis.

The left lung crepitated in general very little; however, when put into water, it floated. In its upper lobe there was a cavity large enough to admit a middle-sized nut, and filled with liquid similar to the expectoration. A bronchial tube, capable of admitting a writing pen, opened into its interior. Dissection soon convinced us that there was a continuation between the parietes of the bronchus and those of the cavity, and that one and the same tissue formed both: in both we found the mucous membrane red and thickened, and the fibrous membrane, and some traces of the cartilaginous rings. Hence it appeared evident to us, that what we had at first taken for a tuberculous excavation, was nothing but a considerable dilatation of a bronchial branch. In several points of the parietes of the portion so dilated, there were small orifices, which led into other bronchi.

On following other bronchial ramifications, either in the upper lobe, or in the lower lobe of the same side, we saw a considerable number of them suddenly acquire three or four times their natural size, then contract again, in order to enlarge once more. We remarked none of them to terminate in a cul de sac; all, on the contrary, in the points dilated, presented on their inner surface several small openings, which were the orifices of so many bronchial tubes of almost capillary size. The pulmonary tissue situated between these bronchi thus dilated, appeared compressed, and resembled the tissue of a lung more or less forcibly pushed back by a pleuritic effusion.

The right lung much more crepitating than the other, likewise presented some of its bronchi dilated, but in a less degree. These dilatations were partial, and consisted in small enlargements full of a puriform liquid, which were, on an average, large enough to admit a hazel-nut. To form these enlargements, branches of small size were dilated here and there, and then resumed their primary dimensions. The pleura costalis and pleura pulmonalis of this side were united by old cellular adhesions. The heart, which was small in size, contained a white, rather dense clot, which adhered strongly to the carneæ columnæ.

Abdomen.—The mucous membrane of the stomach presented, along the great curvature, from five to six superficial ulcerations, the edge and bottom of which were reddish. Bright red injection of the tranverse and descending colon.

In this case we find:—1st, A dilatation of a bronchial tube large enough to form a real cavity in the midst of the pulmonary parenchyma which was compressed around it; 2nd, a series of small successive enlargements along the extent of one and the same tube. No particular symptom announced the existence of this second variety of dilatation; on the contrary, the more considerable dilatation of the bronchi of the left lung was announced, as in the preceding, by a peculiar resonance of the voice. In fine, the great dilatation, which existed in the upper lobe of the left lung, gave rise to genuine pectoriloquy. But whilst in the preceding cases, the entrance of the air into the dilated bronchi was accompanied with a sort of very remarkable puff (souffle), here, on the contrary, not only this souffle did not exist. but even the inspiratory murmur was sensibly weaker on the left than on the right. Did this diminution of the respiratory murmur on the side where the dilatation was greatest, depend on the compression which the dilated bronchi must exercise on the pulmonary tissue? Thence a collapse of the cells and diminution in the quantity of air habitually entering them.

In other respects, all the symptoms seemed to indicate the existence of pulmonary phthisis; the absence of the perspirations alone, so constant a phenomenon in this disease, might incline us to doubt a little the tuberculous degenerescence of the lungs. It was solely in the bronchial mucous membrane that these nummular, purulent sputa had their origin, which ordinarily announce almost to a certainty the existence of a tuberculous excavation. Their extremely fœtid odour is also worthy of remark. A similar phenomenon is mentioned by Laennec.

The ulcerative inflammation, as Hunter called it, detected in the stomach, was not indicated in this patient either by pain, by vomiting, by thirst, or by redness of the tongue; there was merely observed a total dislike to food. In such cases how pernicious a tonic treatment must prove! It might, for a little time, arouse the appetite; but a fatal excess of excitement would have followed. Shall we conclude from this fact, that total anorexia indefinitely prolonged, may suffice in all cases to announce latent inflammation of the stomach? Certainly not; for in persons, who had for a long time lost their appetite, and particularly in phthisical patients, we have found the stomach totally exempt from inflammation. I have no doubt but that in the last case, bitter tonics, prudently administered, such as rhubarb, calumba, quinquina, &c., might be as useful, as they would have been pernicious in the present case.

CASE 9.—*Partial chronic bronchitis—Dilatation of some bronchial branches—Mucous râle in the corresponding points—Cancer of the liver.*

A man about fifty years of age died of a cancerous affection of the liver. He had been for a long time annoyed by an obstinate cough, with very copious purulent expectoration. We had frequently auscultated the chest, and every time detected a well-marked mucous râle on the left side of the chest; both posteriorly on the level of the infra-spinous fossa, and anteriorly on the level of and within the breast. The resonance of the voice in these different points was not increased; percussion yielded a clear sound. This man had none of the signs of tuberculous degenerescence of the lungs, and the râle in several points of the left lung appeared to us to depend solely on the accumulation of mucus in the bronchi. The autopsy verified this part of our diagnosis. Most of the bronchi of the lower lobe of the left lung, were red in their internal surface, and filled with puriform mucus. But, still further, some branches presented here and there small dilatations, for the most part fusiform, with extremely thin parietes, and collapsing as soon as either by incision, or by slight pressure they were emptied of the mucus which filled them. The bronchi of the upper lobe of this lung, and of the entire right lung, were pale and empty.

Auscultation announced, in this case, with great precision, the seat and extent of the bronchitis ; but it furnished no sign which could have induced us to suspect the existence of dilatations of the bronchi.

36. From the preceding cases, as well as from those recorded in Laennec's work, we may, I think, enumerate three principal varieties of dilatation of the bronchi, as well with respect to the nature of the lesion, as with regard to the symptoms indicating it.

In a first variety, one or more bronchi present through their entire extent a greater or less increase of capacity. Sometimes then the tubes resulting from the fourth, fifth, or sixth division of the principal bronchus of each lung, have a diameter equal to, or even greater than the diameter of the latter. Sometimes this dilatation affects but a single branch ; sometimes it exists in several, it sometimes even extends to the bronchial branches of an entire lobe. This kind of dilatation cannot be considered in all cases as the result of mere passive distension of the bronchial parietes. Oftentimes, in fact, these parietes present a thickness evidently greater than in their physiological state ; the mucous membrane possesses greater consistence, and greater density than usual, being sometimes ulcerated ; the fibrous membrane, usually so thin in the small bronchi, is hard and resisting, and the cartilaginous tissue which, in the healthy state, does not exist there, or does not manifest itself there, but in the form of isolated grains, is much more apparent. This first kind of dilatation of the bronchi is not there, at least in all cases, the merely mechanical result of the efforts to cough, or of the accumulation of mucus ; it is a sort of hypertrophy of the tissue of the bronchial parietes.

This first variety of dilatation of the bronchi, from its being so inconsiderable, and of such small extent, cannot be recognised during life without difficulty : when carried to a higher degree, it is indicated by symptoms sufficiently characteristic. Thus, in one of the cases which we have mentioned, where most of the bronchi of the upper lobe of the right lung were considerably dilated, the voice resounded in such a manner, both beneath the clavicle and in the supra-spinous fossa, that we might have believed in the existence of a tuberculous excavation. Oftentimes there is heard at the same time, when the dilatation exists, sometimes a well-marked mucous râle, a genuine gurgling similar to the gurgling of full caverns ; sometimes this gurgling is succeeded by a sort of well-marked puff (*souffle*), such as is sometimes heard in empty tuberculous cavities.

In a second variety there is no longer observed the uniform dilatation of one or more bronchi through their entire extent ; but one of these tubes presents, in merely one point of its extent, an enlargement more or less considerable ; the result of this is a real accidental cavity, which presses back around it the pulmonary parenchyma. Thus one of our cases showed us in one of the pulmonary lobes a cavity large enough to contain a nut : its internal surface presented a considerable number of orifices, which led, each of them, into a bronchus of an almost capillary diameter. One might easily recognise, in the parietes of this cavity, the texture of the bronchial parietes, either the mucous membrane which was continued from the small tubes into its interior, or the fibrous membrane which, through the entire extent of the dilatation, was much more apparent and more dense than in the bronchial branches adjoining. It seemed that here again the cavity of the bronchus became enlarged, according as its parietes became thickened, as is observed in certain dilatations of the aorta coinciding with hypertrophy of its membranes. We have above seen that at other times, on the contrary, the thickening of the parietes of the bronchus co-exists with narrowing of its cavity.

The diagnosis of this second variety must be more or less easy, according to the situation and size of the dilatation. It may be announced either by genuine pectoriloquy, or by a characteristic souffle, which is heard every time the air enters the lungs.

In fine, in a third variety, one and the same bronchial tube being dilated at intervals, presents along its course a succession of dilatations and narrowings. On cutting into the pulmonary parenchyma we find it traversed as it were by a great quantity of small rounded tumours, remarkable for their white colour, for which they are indebted to the puriform liquid which fills them. On penetrating into them with the point of the scalpel, one may easily satisfy himself that these tumours are continuous with small bronchi, which, in order to form them, become enlarged in different places. In the cases of this kind seen by us, the bronchi have not appeared to have increased in thickness in the places dilated, as in the two first varieties; their parietes were, on the contrary, very thin. One might then be inclined to admit that, in this latter variety, the small partial dilatations of the bronchi are but the mechanical result of their distension by mucus in the points where their parietes present least resistance, either by a diminution of their elasticity, or by their really becoming thinner. This sort of dilatation seems to be less rare in children than in adults. I have frequently ascertained its existence, together with M. Guersent, in the hospital for sick children.

It is obvious that it is nearly impossible to establish the diagnosis of this third variety. At most one can only suspect it from the long standing of the bronchitis, the characters of the cough, the great quantity and nature of the sputa, the different râles which are heard, &c.

CHAPTER II.

ALTERATIONS IN THE SECRETION OF THE BRONCHIAL MUCOUS MEMBRANE.

37. The mucous membrane of the air passages cannot be inflamed without the liquid which it secretes presenting modifications, some of which regard its quantity, others its qualities. The greater or less obstruction of the bronchi by this liquid necessarily modifies the respiratory murmur which exists in the healthy state. Instead of hearing the distinct murmur of the pulmonary expansion, we hear a râle which is obviously owing to the displacement of the liquid by the column of air which enters the bronchi at each inspiration. We designate this murmur by the generic term of moist bronchial râle (mucous râle of Laennec). It is far from being as characteristic as the dry bronchial râle of which we have already spoken; sometimes it is confounded by insensible shades with the râle of pneumonia, of which we shall speak elsewhere; sometimes having its seat particularly in the largest bronchi, it approximates more or less closely to the gurgling which indicates the presence of a tuberculous excavation. In this case, the seat of the râle, its extent, the consideration of the other symptoms, may assist the diagnosis with more certainty than the nature of the murmer heard. The following case will justify what we have now stated.

Case 10.—*Chronic bronchitis—Moist bronchial râle (mucous and crepitous râle blended) over the entire extent of the two lungs.*

A labourer, forty-eight years of age, of strong constitution, had enjoyed good health up to the year 1821; he then contracted a cold, the effects of which lasted up to 1824. However, he did not give up his usual employment: the day even before he entered the hospital, he worked as usual; he was then seized with an acute pleuritic pain in the right side, with fever and dyspnœa. Having entered the La Charité, he was immediately bled, and the painful side was covered with leeches. The day after the pain diminished the breathing was more free, but the pulse retained some frequency without there being, however, any heat of skin; the fits of coughing were frequent and painful; the expectoration consisted of a greenish, thick mucus, divided into rounded patches, which floated in a great quantity of serum. The chest, when percussed, sounded well in every part. Auscultation detected in every part of the chest a very manifest râle; in a great number of places, we heard as it were large bubbles of air bursting on the surface of a liquid; in other respects the sound resembled the tracheal râle of dying persons; in other points of the chest, the bubbles of air appearing smaller and more numerous, seemed to produce every time they burst, a noise which might be aptly enough compared to the crepitation of a salt thrown on an ignited body. The pulsations of the heart were heard, accompanied with a sound, but without impulsion, in the lower part of the sternum. The breathing was short and hurried. For a long time the digestive functions of the stomach had not been duly performed. The patient had very little appetite, and frequent pains in the epigastrium; he vomited his food from time to time. The appearance of the tongue, however, was natural. Marasmus was observed to be already commencing.

M. Lerminier gave the following diagnosis: *chronic bronchitis complicated with acute pleuritis, dilatation of the right cavities of the heart, without hypertrophy of their parietes, chronic gastritis.*

A blister was applied over the side affected with pleuritis.

On the following days the stitch in the side disappeared, the frequency of the pulse lessened, but the symptoms of bronchitis continued. From the 15th of May to the 20th of June the signs of the disease of the heart became more marked, the oppression constantly became greater; the countenance assumed a violet tint; the lower extremities first became infiltrated, then the integuments of the abdomen and chest. We still continued to hear the different varieties of râles already mentioned. The patient died the 21st of June, in a state of extreme dyspnœa. Up to his death he took nothing but mere emollient drinks. The active diuretics which we attempted to give him increased the pain of the epigastrium, and were rejected by vomiting. Leeches were several times applied to the anus, and blisters kept to the lower extremities.

Post mortem. Lungs engorged with a great quantity of bloody serum; they were sound in other respects, and crepitated. Inner surface of the bronchi very red in all their ramifications. Considerable dilatation of the right ventricle of the heart, without any other lesion of this organ, or of the great vessels. An effusion of half a glass full of pus into the left pleura, circumscribed by false membranes, near the base of the lung. White softening of the mucous membrane of the stomach over the principal portion of the great cul de sac. This softening was such, that the membrane, when very slightly scraped with the back of a scalpel, was raised in a liquid form.

This case presents an example of the different shades of moist râle which may be produced by mere inflammation of the bronchi. In several places this râle approximated very closely to the crepitating râle of pneumonia; in other parts it scarcely differed from the gurgling of cavities. But, on the one hand, the great extent of this râle, and on the other hand, the absence of the signs indicative either of pneumonia or of tubercles, inclined us to think that it was merely the result of the bronchi being filled with mucus. The varieties of this purely bronchial râle depended, no doubt, both on the difference of the calibre of the bronchi in which the phenomenon occurred, and on the difference in the quantity and quality of the liquid which obstructed these tubes, their calibre being supposed the same.

In this case the disease of the heart appears to have been consecutive to the affection of the bronchi, the habitual engorgement of which might be considered as a permanent obstacle to the free afflux of blood to the lung. Very few symptoms as yet announced aneurism of the heart when the patient entered the hospital. Auscultation alone detected its existence. The double inflammation of the bronchi and stomach alone was evident, and was the sole cause of the symptoms. But the scene soon changed : the entire group of symptoms which characterise dilatation of the right cavities of the heart was seen to appear. The affection of this organ became from that time the prevailing disease, and it was of it the patient died.

38. It sometimes happens that, during the course of a bronchitis, we all at once cease to hear in a certain extent of the lung either the natural sound of the pulmonary expansion, or the bronchial râle. In this same part where the ear no longer hears any murmur, whether natural or healthy, the chest when percussed retains its usual sonorousness. At the same time the patients are seized with greater or less dyspnœa. With Laennec we attribute this sudden suspension of the respiratory murmur to the momentary obstruction of a bronchus, the ramifications of which are distributed to the portion of the lung where the respiration has ceased to be heard. In this case, after a violent fit of coughing, the effect of which is to expel, or at least to displace, the more or less tenacious mucus which obstructed the bronchus, the respiratory murmur becomes re-established as promptly as it had disappeared, and the dyspnœa ceases. However, in some rarer cases, the murmur of the pulmonary expansion is not re-established, the difficulty of breathing increases, suffocation becomes imminent, and death by asphyxia soon takes place. The slightest bronchitis may in that way be changed all at once into a very severe and rapidly fatal disease. The two following cases will present us with facts of this kind.

CASE 11.—*Chronic bronchitis—Obstruction of a bronchus by mucus—Death by asphyxia.*

A labourer, fifty-three years of age, entered the La Charité in consequence of articular rheumatism ; he had also, for about the last two months, an obstinate cough, with expectoration of thick, tenacious sputa. The chest, being percussed several times, always yielded a clear sound. The respiration was heard very distinct on all the left side, and with a mixture of mucous râle in the upper and middle lobes of the right lung. There was no dyspnœa. He had been already several times bled in consequence of the articular inflammation, when one day, in the midst of a violent fit of coughing, the patient was seized all at once with extreme difficulty of breathing. The remainder of the day, and all the night, there was orthopnœa, and almost continual efforts at coughing. The following morning there was imminent asphyxia, face swollen and violet, extremities livid, pulse nearly extinct. The patient, with difficulty pronouncing some words with panting, intreated that we would relieve him from an enormous weight, which he said he felt on a level with the right breast, and which was smothering him. The sonorousness of the chest was not diminished. The respiratory murmur was *puerile* over all the left side ; on the right, posteriorly, some mucous râle was heard in several points ; but on this same side, anteriorly, from the clavicle to a little below the breast, and behind in the supra-spinous fossa, neither the respiration nor the râle was heard, though the chest was elevated with force ; we supposed there was *pulmonary emphysema.* We had hardly quitted his bed, when he expired.

Post mortem.—The viscera of the cranium and abdomen presented nothing remarkable, except general venous injection. The heart, which was well proportioned, contained in its right cavities black blood half coagulated. The lungs, engorged as in several dead bodies, presented, however, a tissue which floated in water. Nothing remarkable in the larynx and trachea. We were in total ignorance of the cause of the symptoms, and of death in particular; nothing explained to us the absence of the respiratory murmur recognised during life in the upper part of the right lung, which absence we had referred to emphysema. But on cutting into the bronchi the blunt point of our scissors met, at the origin of a large air-tube, a mass of concrete half solid mucus, which closed like a stopple this membranous tube, and extended into its interior. It was from this bronchus thus obliterated that the branches arose which carried the air into the upper lobe of the lung. The bronchial mucous membrane was also very red.

One might be astonished that, in this person, symptoms so severe should have resulted from the interception of the entrance of air into a very small portion of the lungs, whilst in a great number of patients, the entire almost of whose lungs was become impermeable to air, life is sustained for a long time, and often without there being much dyspnœa; but in them the permeability of the lungs ceased only by degrees, whilst in our patient the interruption of air was sudden.

We should here remark, that if, in this case, the inspection of the bronchi had not been carefully made, the disease might have been taken for a nervous asthma, for want of any appreciable lesion; and this dyspnœa, which depended on a cause altogether mechanical, might even have been considered as a striking example of metastasis of rheumatism to the lungs.

Case 12.—*Chronic bronchitis with melanoses—Obstruction of a bronchus by a mucous concretion resembling a polypus, increasing dyspnœa, and death.*

A coachman, fifty years of age, entered the hospital several times in order to be treated for an inveterate pulmonary catarrh, with slight dyspnœa, and copious purulent expectoration. Each time he went out relieved, but not cured. We detected in this person, on both sides of the thorax, all the varieties of the bronchial râle. In one point, the column of air, in penetrating into the bronchi, resembled the snoring of a person sound asleep; in another point, it was like a dull prolonged groan; in some places, the bellows blast (bruit de soufflet): in other parts the cooing of a dove perfectly imitated, &c.; in some places, in a word, a sort of gurgling similar to the tracheal râle of dying persons. The last time the patient came to the hospital, his breathing was still free enough. One morning we found him in a state of unusual anxiety; since the middle of the night, after a violent fit of coughing, his breathing, he said, had become suddenly very much embarrassed. On examining the chest with the stethoscope, we ascertained that the air scarcely entered any portion of the upper lobe of the right lung. There, in fact, the respiratory murmur did not exist, and there was heard only a distant bronchial râle. However, in this same part the chest continued to sound well. The sonorousness was even greater than below the left clavicle, where the sound was become a little dull since the last few months. A blister was applied to the chest. The suffocation increased during the day, and the patient died the following night.

Post mortem. Melanoses in the form of black hard masses in the summit of the left lung; pulmonary parenchyma sound elsewhere. On the left, bronchi of a livid red and filled with puriform mucus. On the right, precisely at the same place as in the patient of Case 11, the principal bronchus which distributes the air to the upper lobe, was found completely obstructed by a tenacious mucus. This mucous concretion extended, like polypous and vascular concretions, into three or four bronchial branches. The heart and large vessels presented nothing remarkable, neither did the larynx nor trachea.

The reflections made on the preceding case are equally applicable here.

39. Once the attention is awakened to the species of affection now alluded to, its diagnosis does not appear difficult. We should be inclined to suspect the obstruction of a bronchus, if a considerable dyspnœa supervenes suddenly in the midst of a simple bronchitis, and if, at the same time, the respiration ceases to be heard in a certain portion of the lung, percussion continuing to give a clear sound in the same part. Pulmonary emphysema is the only disease which can give rise to this group of signs.

The indication to be fulfilled in this case is evident, to expel the mucous concretion which obstructs the bronchi; the shocks occasioned by vomiting might be very serviceable; we might also make the patient inhale the vapour of plain water, or water impregnated with different species of aromatics. We might attempt also to administer such medicines as kermes, oxymel of squill, etc., to which has been attributed the power of rendering the bronchial mucus more liquid, by increasing the pulmonary exhalation. We must not neglect also at the same time, as palliative means, sanguineous depletions and revulsives.

40. In order duly to appreciate the changes which the mucus of the bronchi undergoes when attacked with inflammation, regard must be had to the species of secretion which takes place at their surface, in the state of health, in the different individuals. The pulmonary mucous membrane, considered in this respect, presents as many varieties as the membrane of the nasal fossæ. Many persons, in fact, without having a cold, expectorate at different periods of the day, and principally in the morning, a greater or less quantity of matter, sometimes thin and transparent as the sputa of bronchitis at its commencement, sometimes thick, gluey, and opaque as the sputa of chronic bronchitis.

When a bronchial inflammation attacks an individual not in the habit of expectorating, the cough is at first dry, and continues a long time in this state. Those who naturally have the chest plump and fat, according to the common expression, cease to expectorate if the inflammation be acute, if it be slight the expectoration continues to go on; the quantity of the sputa is even augmented, but their ordinary qualities are changed.

41. The expectoration traced in the different phases of acute bronchitis ordinarily presents itself with the following modifications:—

At the commencement of the disease the cough is dry, except in the case already noticed. As long as dry this cough continues, the bronchitis must be considered as still in its commencement. At the end of a time, the length of which varies according to individual peculiarities, and according as the patients are or are not subjected to proper treatment, each fit of coughing is followed by the expectoration of a clear, transparent, glairy mucus, like white of egg; when it is poured from one vessel into another, it is observed to flow in one mass of extreme tenacity. Sometimes it assumes a ropy appearance; it sometimes extends in a sort of transparent filamentous tissue, the appearance of which presents sufficient resemblance to that of the very fine mucous membrane which lines the frontal or maxillary sinuses; its tenacity and viscidity are greater according as the irritation of the mucous membrane is more considerable. When the patient is annoyed with violent fits of coughing, accompanied with considerable heat within the chest, as also with marked distress and very great general anxiety, the expectorated matter acquires remarkable viscidity. Then if we incline the vessel containing it, we see it is not so easily detached from it; it adheres to the edges of the vessels by long streaks, and it resembles a little the jelly-like sputa of acute pneumonia.

42. When the bronchial inflammation is accompanied with fever, the viscidity of the sputa becomes also greater during the febrile paroxysm; and as at the same time the other symptoms of the bronchitis become worse, an experienced practitioner might be deceived by this considerable viscidity of the sputa, and incorrectly consider it as the sign of an inflammation of the parenchyma of the lung. But if he

again observe the sputa after the cessation of the paroxysm, he will find that they have lost their viscidity, and the mistake will no longer be possible.

At other times every species of expectoration is suppressed during the paroxysm; which indicates an increase of irritation in the mucous membrane.

Some patients present, towards the end of the perspiration which terminates the paroxysm, a copious expectoration of thick, opaque sputa, such as is observed in the last period of acute bronchitis. But this is only a temporary state, and the patient soon expectorates anew a clear limpid mucus, as before the febrile exacerbation. Thus we see the expectoration present itself in a single and often a very short paroxysm, with all the modifications observed in the different stages of bronchitis.

43. A froth more or less copious ordinarily exists on the surface of the sputa. Their quantity depends on the facility with which they are discharged. If the patient expectorates only after a prolonged fit, during which, the air several times inspired and expired, is intimately mixed with the mucus which fills the air tubes, the sputa he expectorates are blended with a considerable quantity of air, which forms on their surface a sort of mass, which cannot be separated without difficulty.

44. The sputa, in this first stage, are frequently marked with some streaks of blood arising from small vessels which are ruptured in the midst of an effort to cough. The blood is then mixed with mucus, but it is not combined with it as happens in the reddened sputa of pneumonia.

45. It often happens that in the midst of the transparent mucus there are found, in greater or less numbers, small clots of a dull white; they do not come from the lung, and appear secreted in the pharynx and posterior part of the mouth, by the numerous cryptæ with which the mucous membrane of these parts is supplied. These clots have been erroneously considered as portions of pulmonary tubercles, and consequently as one of the pathognomonic signs of phthisis.

46. As long as the sputa present the appearance which we have noticed, the symptoms of bronchial irritation do not improve; the expectorated matter is still in a state of crudity, according to the ancient mode of expression,—an expression connected with their humoral theories. But according as the inflammation proceeds towards resolution, the sputa change character. The mucus which forms them gradually loses its transparence; it is mixed with opaque, yellow, white, or greenish masses, which, scanty at first, continually increase, and ultimately constitute the entire of the sputa. Such an expectoration is ordinarily accompanied by a marked remission in the different symptoms of bronchial inflammation. It indicates that this inflammation is resolved, that its coction is effected, as the ancients used to say. Nothing is more variable than the appearance and qualities of the opaque sputa expectorated towards the termination of acute bronchitis.

Though, since the time of Hippocrates down to the present day, it has been asserted, that the resolution of pulmonary catarrh cannot be regarded as complete, until the sputa had acquired a certain degree of thickness and opacity, we have seen some persons affected with intense inflammation of the bronchi become perfectly restored to health, though their sputa had constantly continued in what was called the state of crudity. These, however, are rare exceptions to a general rule.

47. The inspection of the sputa may then serve to indicate with certainty, with some few exceptions, the period of the disease and the degree of irritation of the bronchial mucous membrane. In the case where there is a return of the inflammation, when it was now approaching its termination, the change which then takes place in the sputa is still a certain index of the return of the inflammation to a more acute state.

Neither is the consideration of the sputa in bronchitis devoid of importance with respect to the curative indications. It is often by having regard to the qualities of the sputa, to their state of transparence and opacity, to their easy, or laborious, rare or frequent, expectoration, that we shall be led to prefer such or such a therapeutic means.

48. When the acute bronchitis, instead of terminating by resolution, passes to the chronic state, the sputa retain the appearance which they presented in the last period of the acute inflammation. They are opaque, white, yellow, or greenish. Sometimes they adhere to the bottom of the vessel, sometimes they float on a transparent or turbid mucus, or else they remain suspended in the midst of it. Most commonly they are inodorous and appear insipid to the patient. Their expulsion, which in general is easy, is preceded by slight efforts at coughing.

The distinction of the sputa of chronic bronchitis from those which belong to tuberculous degenerescence of the lungs is often very difficult. We shall reserve whatever we have to say on this subject for our description of the expectoration peculiar to this last disease.

49. A bronchitis may continue a very long time with an expectoration similar to that which is observed at the commencement of the affection. It is then an acute inflammation, indefinitely prolonged, as is announced not only by the characters of the sputa, but also by the aggregate of the other symptoms, such as an habitual feeling of heat and of dragging within the chest, violent and painful fits of coughing, increased temperature of the skin, &c. Thence the necessity of a demulcent antiphlogistic treatment, notwithstanding the long duration of the disease.

50. The sputa of chronic bronchitis, we have said, are, in general, almost inodorous; sometimes, however, they have presented a remarkable fœtid odour, nearly equal to that of the greyish sputa of gangrene of the lung. No particular lesion of the bronchi accounted for this unusual fœtor, which could be referred only to a peculiar alteration of the secretion. We have already observed fœtid sputa in one of the patients affected with dilatation of the bronchi (Case 8.) Here is another striking instance of it.

CASE 13.—*Chronic bronchitis—Great fœtor of the sputa—Melanosis of the lung.*

A cook, sixty-five years of age, entered the La Charité towards the middle of March, 1822, in a state of extreme emaciation. For the last ten or twelve years his breathing was short, and he had a cough every winter. During the summer of 1821, he spat a little blood. At the time of entering the hospital, he coughed very much, and expectorated a great quantity of *very fœtid* greenish sputa, which flowed out all in one sheet when the vessel was inclined; one would have said the liquid came from a pleuritic sac or a vast tuberculous excavation. According to the patient's account, a similar expectoration took place for several years back. The chest, when percussed, sounded well everywhere. By auscultation the respiration was heard to be loud and distinct with some whistling (sifflement) posteriorly at intervals. The patient was free from fever, and had never had any sweats. (Morton's pills; compound hydromel*.)

The ten or twelve following days the state of the patient remained the same. The expectoration always presented a repulsive fœtor. Appetite good; great debility.

The 28th of March, the state of the patient became suddenly worse. Face livid; extreme dyspnœa; the pulse, which was very frequent and irregular, could scarcely be felt.

The two days following he was threatened with suffocation. A well-marked crepitating râle posteriorly on the two sides; pulse imperceptible; tongue dry and a little brown. He died on the 31st.

Post mortem. Remarkable softness of the cerebral substance. Considerable quantity of serum accumulated in the lateral ventricles and in the sub-arachnoid cellular tissue on the upper surface of the brain.

---

* See the *Formulaire des Hopitaux de Paris*, by M. Ratier.

A very great quantity of frothy colourless serum gushed forth from the tissue of both lungs (œdema). In some parts it did not crepitate, was hard, and of a deep black (infiltrated melanosis). The large bronchi, full of a liquid similar to that expectorated with respect to its extreme fœtor, were white on their inner surface, but in the small ramifications filled with the same liquid; the mucous membrane presented a deep red colour.

Red injection of the mucous membrane. Spleen large, very soft, and containing a fluid black as ink.

The great fœtor of the sputa may then sometimes appertain to a mere secretion of the bronchial mucous membrane. Their extreme liquid state, their flowing in one uniform sheet, do not always indicate the existence of a cavity in the pleura or lungs, the parietes of which secrete pus. Besides, this expectoration was going on for several years, and, if it had its source any where else than in the bronchi, death would have occurred much sooner.

The slight melanosis observed in some parts of the pulmonary parenchyma had probably but little share in the wasting of the patient. The marasmus appeared to be caused particularly by the chronic bronchitis, which lasted for a great number of years. Let us not forget to remark, as negative signs calculated to distinguish similar cases from the real pulmonary phthisis, the constant state of apyrexia and the total absence of sweats.

This patient was, no doubt, inevitably doomed to death; he died, however, unexpectedly. In many chronic affections, the patients sometimes die all at once, without a struggle, whilst they still have considerable strength, and when the brain, heart, and lungs still duly perform their functions. The immediate cause of life's ceasing thus suddenly escapes us then altogether. Such was not the case here. Death was preceded by a dyspnœa which came on suddenly, and which seemed to be the result of serous engorgement (pulmonary œdema), which took place all at once in the lungs.

51. There are a certain number of cases of acute or chronic bronchitis which are particularly remarkable for the extreme copiousness of the bronchial secretion. This excessive secretion seems to be, in many cases, the principal cause of the exhaustion and death of the patients. These mucous, serous, or purulent fluxes, are then, in the language of the Montpellier School, the principal element of the disease. The other symptoms of inflammation are often scarcely apparent, or even none at all, so much so that one would be inclined, in some cases, to separate these fluxes altogether from real inflammatory affections, with respect to the nature of the symptoms and of the treatment.

CASE 14.—*Chronic bronchitis—Abundant expectoration—Death by marasmus.*

An old man was brought to the La Charité in the April of 1820. He had a cough for the last eight months, and expectorated for the last five months, in the space of twenty-four hours, better than a pint of transparent, colourless mucus, on the surface of which there were round greenish patches separated from each other. The breathing was short and frequent. The chest, when percussed, sounded well in every part; in every part also the respiratory murmur was heard with a mixture of the different bronchial râles dry and moist. Skin not hot, pulse not frequent. Extreme emaciation and debility. On the three following days his voice became extinct, features altered, and obstinate constipation set in. On the fourth day there was a slight delirium; diminution in the quantity of the sputa, which are now in the form of patches and of a dirty grey. On the 5th day the patient ceased to expectorate; features sharpened, tracheal râle; he died in the course of the day.

Post mortem. The tissue of the lungs, moderately engorged with serum, crepitated in every part, and was healthy. The bronchial mucous membrane was red only in patches in the large tubes ; in the small tubes the redness was brighter and uniform ; they were filled with a liquid similar to that of the sputa. All the other viscera were healthy.

This case furnishes a well-marked instance of a chronic bronchitis exempt from all complication. Did it occasion death by the great wasting attending it every day? As in the thirteenth case, there was no species of febrile reaction. In this case, should not the principal indication have been to endeavour to diminish the excessive secretion of the bronchi by changing their mode of exhalation? Might not this indication have been fulfilled by those substances called balsamic, either given internally or directed to the mucous membrane of the bronchi in the form of vapour? Is it not in cases of this kind that the vapour of tar has succeeded, which was proposed a long time ago as a specific against pulmonary phthisis?

In this patient, the sputa very closely resembled those observed where the lungs are the seat of tuberculous excavations ; but *complete absence of fever, and the signs afforded by auscultation,* were capable of throwing light on the real nature of the disease.

Let us remark the great dyspnœa with which this patient was affected, without lesion of either the pulmonary parenchyma or of the heart. The very abundant secretion alone of the mucous membrane of the air passages, must, in fact, be considered as one of the very numerous causes of *asthma.* The persons in whom this depraved bronchial secretion exists, habitually have the breathing a little embarrassed. If under the influence of any cause whatever, they cease to be able to expectorate so freely, or else, if the copious secretion, which habitually takes place on the internal surface of the bronchi, undergoes all at once considerable increase, suffocation may become imminent; but, as soon as the air-passages are disengaged from the liquid which obstructed them by the resources of art or the unaided strength of nature, the dyspnœa diminishes rapidly, and the patient recovers life with free breathing. We shall return to this subject again.

CASE 15.—*Chronic bronchitis—Abundant expectoration—Lesion of the pulmonary parenchyma.*

A man, forty-eight years of age, with black hair, and great muscular development, was annoyed, for the last eight years, by an obstinate cough, from the commencement of which he expectorated a great quantity every day. The sputa consisted of a transparent mucus, on the surface of which large purulent patches floated, with thin, round edges, greenish white colour, inodorous, and separated from each other. The patient had habitual dyspnœa. On auscultating the chest, we found the breathing loud and free, all over the left side of the thorax ; but on the right and posteriorly we heard a manifest râle, which appeared to us produced by the mixture of air and mucus in the branches of the bronchi. The patient never had any fever ; though very thin he was not in that state of emaciation, which accompanies organic digenerescence of the lung ; his strength, of the progressive diminution of which he complained very much, was still sufficient to enable him to get up every day. In vain had the patient been tormented every day, both before and since his coming to the hospital, by several medicines, external and internal, such as setons, moxas, blisters, sulphureous waters, &c., they neither diminished the expectoration, nor changed its character. Towards the middle of January 1821, six months after his entering the La Charité, the patient ceased to leave his bed. From that time the debility made rapid progress. Semi-orthopnœa, *never had either fever, diarrhœa, or sweats ;* expectoration the same. Only two days before death, his pulse became accelerated, and the skin became hot ; the patient vomited a considerable quantity of greenish bile, ceased to expectorate, and died.—Was that patient affected with pulmonary tubercles ? we never thought so, and the post mortem examination justified our diagnosis.

Post mortem. The parenchyma of the left lung was perfectly sound in all the lower lobe and in the principal part of the upper lobe ; at the summit it was hard, unequal, and black externally ; when cut into it presented three or four small masses, black as ink, very hard, each being the size of a hazel nut ; others, which were softer, were like bits of charcoal scattered through the tissue of the lung, the vessels of which were injected with this substance diluted in water. This portion of lung was evidently melanosed. The bronchi were pale and empty.

The right lung adhered firmly to the ribs. In some places its tissue traversed by black spots, was hard, greyish, impervious to the air ; it was the grey hepatisation of chronic pneumonia, with the admixture of five or six small miliary tubercles, about the size of a pin's head. These diseased portions formed at the utmost three tenths of the entire mass of the right lung. Elsewhere it was pervious to the air, and perfectly sound ; but on cutting into its tissue we observed a puriform liquid, similar to the matter of expectoration, issue from a crowd of small bronchial ramifications. The great tubes which seemed to us more capacious than ordinary, the branch which results immediately from the bifurcation of the trachea, were also filled with it. The mucous membrane was moderately red.

The melanoses * which were found in the summit of the left lung, the very few miliary tubercles developed amidst the portions of the right lung, which were affected with chronic pneumomia ; in a word, this chronic pneumonia itself appeared to us to have contributed but in a very secondary way to the wasting and death of the patient. In him, as in the individual, the subject of Case 14, the very copious secretion of the bronchial mucous membrane appears to have been the principal cause of it. With respect to its mischievous effects on the system, this secretion may by assimilated to all excessive evacuations a long time kept up. Let us not forget, however, that some persons bear an abundant loss of bronchial mucus for a very long time, without their constitution appearing to be sensibly injured by it. Such was the case of a man upwards of seventy years of age, of whom Van Swieten speaks, who regularly expectorated every day for thirty years several ounces of pus (puris albi cocti), and who, in other respects, was in perfectly good health. Experience too has taught practitioners, that several of these copious expectorations, which produce no disturbance in the system, should be valued ; they are a sort of evacuation set up by nature, which are not always stopped with impunity. Is it not, in this respect, the same with the expectoration as with the pus formed by old ulcers, arresting the flow of which is often dangerous ?

52. Here we found the mucous membrane less inflamed than in the subject of the 14th Case. In these two patients, however, the expectoration was almost equally abundant, and had the same characters. The following case will afford us an instance of a very copious bronchial flux, without any appreciable trace of inflammation of the mucous membrane.

CASE 16.—A cabinet-maker, forty-five years of age, had enjoyed tolerably good health up to about the age of forty-three. He then caught cold, which lasted for six months, and fatigued him very much. Some months after he began to cough again ; but this time the cough was in some measure only secondary, and brought on by a sensation of fulness which the patient said he experienced within the chest. This sensation returned several times in the day ; it was accompanied with dyspnœa, general uneasiness, sometimes very great distress. A slight coughing hardly commenced when the patient began to expectorate in great quantity a frothy liquid, similar, with respect to colour and consistence, to a weak solution of gum in water. The patient estimated the quantity of expectoration in the 24 hours at about a pint and half. Six months passed on in this state, without the health appearing in other respects perceptibly injured. But at the end of this time the patient began to waste and to lose his appetite and strength. Having entered the La Charité, in the July of 1821, he was now in a state of great emaciation. His face was pale and puffed, some œdema around the ankles; in the midst of the frequent efforts to cough he expectorated a great quantity of a liquid very like gum-water, as has been already mentioned, with a mixture of some mucous flocculi. This liquid, when treated with sulphuric acid, subjected to the action of heat, coagulated like albumen, and the opaque flocculi which were held suspended in it were then precipitated in the form of clots. Auscultation detected nothing but the mucous râle in different points of the thorax; the heart seemed to be in its natural state; pulse small, a little frequent, no heat of skin. This patient had a great dislike for food, he passed but little urine, and was habitually constipated. We were struck with the state of emaciation of this person, in whom no important organ appeared seriously injured; the puffy appearance of his face which was totally devoid of colour, his truly anæmic aspect, would make one take him for a person in whom excessive discharges of blood had taken place. (Decoction of polygala, with addition of kermes, Morton's balsamic pills; stimulating frictions over the extremities; blisters applied in succession over the chest and lower extremities.) We observed, for the two months following, the patient to become progressively weak; the expectoration continued; for the eight or ten last days of his life there was pain in the epigastrium, tongue red, nausea; increased temperature of the skin; death whilst making an effort to vomit.

---

* I have elsewhere discussed the nature of this lesion, which I think should not be considered as an accidental tissue in the sense attached to this word by Laennec, and which in the lung in particular seems to be nothing but the pulmonary parenchyma indurated and coloured black. See my work on *Pathological Anatomy.*

Post mortem. Lungs crepitating and healthy; some cellular adhesions of the two pleuræ, remarkable paleness of the tracheo-bronchial mucous membrane through its entire extent; healthy state of heart, pericardium, and great vessels. Considerable redness of the mucous membrane of the stomach towards the great cul de sac; whiteness of the rest of the digestive canal. A little serous infiltration in the sub-arachnoid cellular tissue of the convexity of the cerebral hemispheres.

This case appears to us very interesting, with respect to the state of the bronchi, the nature of the liquid expectorated, and the symptoms both local and general. If there be any case, in which we should admit the existence of a flux without preceding inflammation, is not this one? It seems natural to attribute to the copious evacuations, of which the bronchi were the seat, the progressive wasting of the patient. In the course of our observations we remarked the great analogy between the aspect of this person and that of patients who have suffered great loss of blood. All the other secretions were at the same time null, or very scanty. The appetite, which according to theory should have increased, was totally gone, and the stomach seemed, by the state of the tongue, to sympathise with the rest of the system. Yet this viscus was inflamed towards the close, and it was of acute gastritis the patient died *.

53. There are other cases where it is no longer an abundant secretion a long time continued, which is the cause of the exhaustion of the patient. But it is all at once, under a form really acute, that a very abundant quantity of mucous, serous, or purulent liquid is secreted by the bronchial mucous membrane, so as to simulate

---

* In this case, by availing ourselves only of the lights furnished by Pathological Anatomy, we could have acquired no notion regarding the cause, seat, or nature of the disease. For surely we should not explain it by the state in which the stomach was found. Here again is disturbance of function, without an appreciable disturbance of organisation.

sometimes an effusion, which suddenly makes its way out from the pleura through the bronchi. In cases of this kind, sudden asphyxia may be the result of the rapidity with which the liquid accumulates in the air-passages.

CASE. 17.—*Acute bronchial flux producing death by asphyxia in an individual affected with pneumonia and chronic bronchitis.*

A man, forty-five years old, having had, the preceding year, a pleuro-pneumonia, entered the La Charité, in August 1820. Since his illness he had continued to cough ; he complained of his respiration being habitually embarrassed ; all the right side of the chest, when percussed, yielded a very dull sound. The patient lay constantly on that side ; breathing short, cough frequent, with expectoration of a great quantity of opaque mucus, resembling the sputa of chronic bronchitis ; pulse hard, but not frequent. Great emaciation, functions of digestive organs intact. Same state during the fifteen days following. All at once, on the night of the 15th September, the patient awoke in a state of imminent suffocation, and expectorated in a very short time an enormous quantity of mucous sputa, which he seemed really to vomit. They united into a homogeneous mass of a greenish yellow colour, which flowed from the vessel, when inclined. However, this liquid being continually carried into the trachea and larynx, and filling them more rapidly than it could be expectorated, soon suffocated the patient.

Post mortem. Grey and dry hepatisation of at least the two lower thirds of the right lung. In the summit of this same lung were found two small tubercles which were beginning to soften. On cutting into the lung, we saw to flow out from a multitude of small points a liquid similar to that of the expectoration. These were the divided orifices of a number of small bronchial tubes; so that this liquid occupied and obstructed all the divisions of the air-tubes[*]. The large bronchus, the trachea, and larynx, were equally filled with it. The left lung was healthy ; the large bronchi of this side were full of the same liquid, which no doubt had flowed there from the bronchi of the right lung. There was none of it in the small branches. A cancerous vegetation, of a mushroom form, existed within the stomach, at about two fingers' breadth to the left of the pylorus, which was free.

In this case the excessive secretion which took place on a sudden on the inner surface of the air-tubes, had been preceded by a chronic bronchitis ; it was only the expectoration usual in this disease, which, without any known cause, without any appreciable exasperation of the inflammation, became so abundant and so rapid all at once, that the patient died asphyxiated, as in the case where a purulent or sanguineous tumour opens into the bronchi.

CASE 18.—*Serous flux of the bronchi, the sudden appearance of which coincided with the absorption of a hydrothorax.*

A turner, thirty-six years of age, was admitted into the La Charité in the winter of 1820. He had an aneurism of the heart. His limbs were œdematous ; and, besides, the sound was dull on the right side of the chest. (The method of auscultation was not then familiar to us.) There was no sign of pneumonia. This person was considered as labouring under symptomatic hydrothorax. For several days nothing new presented itself in this patient ; he coughed as most aneurismatic patients do, and expectorated some mucous sputa. All at once he was seized with extreme anxiety ; the breathing became momentarily very much embarrassed, and he threw up an enormous quantity of serous limpid sputa, like the white of an egg not boiled. These sputa came up so copiously that the patient seemed to vomit. This extraordinary flux continued for some hours. The following morning the breathing was easy; the patient felt quite happy at his own state, saying that he was freed from an enormous weight which pressed on his chest. But what was our astonishment when, on percussing the chest, we found the dulness of sound on the right side entirely gone.

---

[*] We found an exact resemblance between this description and that given by Van Swieten of the lung of a person who died asphyxiated, after having expectorated a great quantity of pus. *Mirabatur utique pus exire, dum cultello secaretur pulmonis substantia : non autem exibat pus magnâ copiâ simul, sed guttâ unâ vel alterâ tantum, ex dissectis nempe aspera arteriæ propaginibus.* (Comment. in Boer., Aph., tom. 4, p. 60.)

We do not by any means recognise, in this sudden discharge of liquid from the surface of the bronchi, the ordinary progress of an inflammation. This abundant secretion lasted but some hours, and ceased as suddenly as it appeared. Must we not here recognise another species of effort on the part of nature, similar for instance to that produced by sweat? It is a kind of fluxionary movement, the mechanism and proximate cause of which we are no doubt far from understanding, but which we should receive as a fact, and which, in particular, we should be careful not to confound with inflammation.

What was very remarkable in this case is, that, at the same time that a great quantity of liquid flowed from the surface of the bronchi, the serum effused into one of the pleuræ was re-absorbed. This is not the only example we possess of serous collections whose sudden disappearance coincides with the establishment of an abundant serous exhalation from another surface. Here is as marked an instance of it as the preceding. Except the exhaling surfaces which were not the same, the two cases have the greatest resemblance.

A young man who had had cough for some months was seized with an acute abdominal pain which continued for three or four days, then the belly became tumefied. The patient entered the La Charité during the September of 1822. Then the abdomen, which could be pressed without pain, was the seat of an evident fluctuation. The gastro-intestinal mucous membrane appeared healthy. This ascites was considered as consecutive to peritonitis. (The first day, leeches were applied to the anus; on the following days blisters to the lower extremities, aromatic frictions over the abdomen, diuretic drinks.) The dropsy did not diminish. Purgatives were tried. The patient took a mixture consisting of two ounces of castor oil, and half an ounce of syrup of buck-thorn This purgative produced copious evacuations: the first consisted of yellow liquid fæces; then the following stools presented merely a limpid serum, slightly coloured yellow. An enormous quantity of serum was then discharged by the anus in the space of fifty hours; at the end of this time the abdomen fell, no fluctuation was perceived in it; the flux from the intestines then began to diminish, and at the end of some hours it ceased altogether. Subsequently this patient died of phthisis pulmonalis. Several convolutions of the small intestine were found united together by cellular bands similar to those so often found in the pleura.

Might we not in this case apply the precept of Hippocrates: *Quo natura vergit, eo ducendum?* The purgative which was given, after other remedies had been tried in vain, usually excites but moderate evacuations. Here, on the contrary, it gave rise to excessive purgation. It seemed that nature waited for but a slight artificial stimulus to produce on the surface of the intestine an abundant exhalation of liquid, the necessary result of which was to be the absorption of the peritoneal serum. The ancients would have had no hesitation in admitting, in the two preceding cases, the removal of the serum to the surface of the bronchi in one case, to the surface of the intestine in the other. We would not attempt to decide the reality of such a metastasis; but we think it very possible. It certainly is not repugnant to the laws of strict physiology to suppose that a liquid absorbed in any one part of the body, and carried into the torrent of the circulation, may be separated from it in nature on another surface by a kind of eliminatory process. Thus the bile, retained in its excretory canals, re-enters the blood, and tinges all the secreted liquids. Thus Prussiate of potash, which had been deposited in the cellular tissue, has been found on the one hand in the blood and lymph of the thoracic duct, and on the other in the serum and intestinal mucus (Fodere). It is then by a natural process that this salt had entered the blood, and it is by a natural process that it left it. Physiologists have now discovered in the sweat, in the urine, in the serous and mucous liquids, the different substances which they had injected into the veins ; the water which they introduce into the latter soon transudes on the surface of the serous membranes, &c. Surely then there cannot be any thing astonishing in seeing a liquid absorbed in the peritoneum leave the system with the urine, or with the intestinal or bronchial mucus.

54. We have hitherto seen the intensity of the dyspnœa in bronchitis without complication caused either by certain organic alterations of the bronchi, or by the accumulation of a great quantity of liquid in these tubes. There are cases of acute or chronic bronchitis, where without these causes existing, and without the possibility of discovering any other, the respiration presents such embarrassment, that the patients die rapidly in a state of asphyxia. We shall now cite instances of this kind.

CASE 19.—*Acute bronchitis—Measles—Premature disappearance of the eruption; fatal dyspnœa.*

A baker, twenty years of age, of good constitution, living in Paris only for the last two months, and affected for the last five or six weeks with a slight diarrhœa, presented on the 10th of April all the precursory symptoms of measles—redness of the eyes, coryza, hoarseness, and cough. The same state on the three following days. On the 14th, the eruption appeared ; the patient kept his bed. On the 15th, the entire body was covered; entered the La Charité on the evening of this day. The eruption was then confluent, and quite characteristic ; pulse hard and frequent ; redness of tongue and lips ; violent cough ; no other bad symptom. Towards the middle of the night the patient felt some oppression ; this increased rapidly, and on the following morning, the 16th, we found the patient in a state of half asphyxia ; eyes full and prominent ; face purple ; breathing short and very frequent, performed both by the ribs and diaphragm ; cough almost constant, some mucous sputa ; the chest, when percussed, sounded well in every part ; auscultation caused some mucous râle to be heard in different places. Of the eruption there remained only some pale spots just on the point of disappearing. The pulse preserved its frequency and hardness, and the tongue its redness. This group of symptoms seemed to indicate the existence of a pneumonia ; however, the pathognomonic signs of this affection were completely wanting. Could a simple bronchitis, by its extreme acuteness or sudden exasperation, give rise to so intense a dyspnœa, and could this inflammation joined to that of the primæ viæ explain the very severe state into which the patient had so suddenly fallen. Be that as it may, the indications to be fulfilled were no longer doubtful. The internal inflammations must be diminished and that of the skin recalled. To this end, twenty leeches were applied over each side of the chest and ten to the epigastrium. After the blood ceased to flow, a blister was applied to each leg. The skin was rubbed with volatile liniment.

Considerable relief followed this treatment : in the evening the breathing was much less embarrassed, cough easier, tongue lost its redness ; however, the eruption had not reappeared.

17th. We observed nothing but the symptoms of an intense bronchitis. Breathing but very little hurried.

18th. Fever nearly gone, and the opaque appearance of the sputa announced the approaching termination of the bronchitis. All at once, in the evening, the breathing again became very embarrassed ; he was bled to twelve ounces.

On the following morning, the dyspnœa was still considerable ; frequency of the pulse increased. (Two blisters to the thighs.) All this day the state of suffocation increased more and more ; on the 20th, there was lividity of the face, lips were of a purple tint, there was orthopnœa. One would have said that the patient was dying of aneurism of the heart. Died a little after the visit.

Post mortem. The mucous membrane of the larynx, trachea, large bronchi, and their smaller divisions intensely red. In some parts of the first divisions of the bronchi there were found some white membraniform concretions, similar to the false membrane of croup. The pulmonary parenchyma was sound and crepitated in every part of its extent; posteriorly it was engorged; heart healthy; clots of deep black in the right cavities. Stomach white, as well as the small intestine, which contained a considerable number of ascarides in its lower fourth. The cæcum contained some trico-cephalous worms; its mucous membrane presented near the valve a red patch, from which three or four small conical vegetations were raised three or four lines long. The rest of the large intestine was white, and filled with liquid fæces; liver engorged with blood; spleen large and firm. A great quantity of serum infiltrated the sub-arachnoid cellular tissue; cerebral substance not injected; the lateral ventricles, particularly the right, distended with much limpid serum.

This case would have been considered in former times as an instance of the repulsion of the measles. In the medical theories of the present day, the extreme difficulty of the breathing, the intense fever, and, in fine, the death by asphyxia, will be accounted for by the intensity of the bronchial inflammation; thence, also, the premature disappearance of the cutaneous eruption. This inflammation was abated for a first time under the double influence of the blood-lettings, and of the revulsives with which the skin was covered; but two days after the dyspnœa reappeared: it did not yield to another bleeding, and its constantly increasing progress terminated in the patient's death. It is certainly very uncommon to observe such a group of phenomena without lesion of the pulmonary parenchyma or of the pleuræ, of the heart, or large vessels. Is it not, however, very conceivable that an inflammation which attacks suddenly or with extreme violence so extensive a surface as that of the entire bronchial mucous membrane, should excite in the system as much disturbance, at least, as the inflammation of a circumscribed portion of the gastro-intestinal mucous membrane? Do we know sufficiently the nature of the change produced by the air on the blood, in order to know how far an intense inflammation of the small bronchi may not prevent this necessary change? thence, perhaps, the principal cause of the dyspnœa, the asphyxia, &c. In fine, those who admit the existence of nervous dyspnœa, and essential asthmas, might equally cite the preceding case in support of their opinion; they would say that they often saw the bronchial mucous membrane as intensely inflamed without any perceptible dyspnœa resulting from it; from this they would conclude that, in the present case, the dyspnœa was an essential disease, independent of the inflammation of the bronchi. There was a time, also, when persons would not have hesitated to consider the worms found in the intestines as the principal cause of all the phenomena, so varied are the points of view in which one and the same fact may be regarded, so different are the consequences which each person may deduce from them, according as he is guided by such or such a theory.

One must be struck, no doubt, with the great quantity of serum which filled the cerebral cavities; however, the intelligence remained intact to the last. If the patient had presented any signs of delirium, convulsions or stupor, these symptoms would have been at once referred to this effusion, which would then have been called acute hydrocephalus.

The inflamed state of the cæcum explains sufficiently the diarrhœa which existed for the last six weeks. This fact is perhaps of some importance, because we have rarely an opportunity of ascertaining the state of the intestines in cases of slight diarrhœa, which exist for a long time without causing either fever or any perceptible disturbance of the system.

Case 20.—*Slight chronic bronchitis—Suppression of the running of an old sore—Fatal attack of asthma.*

A man, forty years of age, had, for a long time, an extensive ulcer on the left leg. The part of the leg below this ulcer, as also the entire foot, were very much swollen and extremely hard; the skin became of a dirty grey colour; in a word, this limb presented many of the characters of elephantiasis. A considerable quantity of pus flowed habitually from the surface of the ulcer. This man had, for the last five or six months, a slight moist cough, which was not accompanied either by dyspnœa or pain of chest. Placed, by mistake, in a medical ward, this person had been in it for some days, and was going to pass into one of the surgical wards when he was all at once seized with extreme difficulty of breathing; we perceived, at the same time, that the surface of the ulcer discharged much less pus. The patient, who sat up in a state of inexpressible anxiety, entreated us in a panting voice, to free him from an enormous weight which pressed on the chest and was smothering him; the inspirations were short and very frequent, and convulsive at intervals. The pulse was moderately frequent and very weak. In vain we sought, either in the heart or in the lungs, for the cause of such alarming symptoms. The chest had in every part its ordinary sonorousness, except posteriorly in the left, nearly to the extent of some inches, where the sound was less clear; except in this point, where the respiration was weak and accompanied with a râle, the air was heard freely to penetrate every where the pulmonary vesicles. The heart and its appendages appeared to be in their natural state. We remained then in total ignorance of the cause of this dyspnœa, which from time to time, became more intense. Bleeding, blisters, &c., did not diminish it. The following morning the difficulty of breathing went so far, as to threaten the patient with death by asphyxia. It was asked if the cause of the dyspnœa resided in the larynx? We thought we saw some analogy between this disease and œdema of the glottis; tracheotomy, the only remaining chance, was proposed. M. Roux performed it. It proved, however, unavailing; the oppression went on increasing, and that same night the patient died.

Post mortem. The pulmonary parenchyma was sound, and crepitated, except posteriorly on the left, over a space nearly equal to the tenth part of the lower lobe, where the tissue of the lung was hepatised. The mucous membrane was red only in small patches. The heart and large vessels were healthy. Dissection of the left leg exhibited a lardaceous thickening of the sub-cutaneous cellular tissue, with necrosis of the tibia.

Here we cannot, as in Case 12, refer the asthma to the extent or intensity of the bronchial inflammation, for this inflammation was slight, and occupied but a small portion of the mucous membrane. With respect to the partial hepatisation of the lower lobe of the left lung, it is probable that it was a chronic affection, and the principal cause of the cough which tormented the patient for the last six months. Admitting even that it was of recent formation, still it did not account for the dyspnœa. Certainly, if there is a case where the existence of a nervous dyspnœa, or one without appreciable organic lesion should be admitted, it is this. The difficulty of breathing began to appear at the same time that the purulent secretion of the ulcer was suppressed. We shall merely note this coincidence of the phenomena without attempting to establish their connexion.

55. The very paucity of the cases in which no appreciable lesion can explain the asthma, seems to us an additional motive for our studying attentively the very small number of cases of this kind, which have been hitherto deposited in the

annals of science. Unfortunately a contrary course is most frequently adopted; and, for the sole circumstance that a fact is found to contradict the ideas generally adopted, it is not taken into account, it is even forgotten, and similar facts must be multiplied, in order that it may acquire, in some degree, a tardy credence, that its importance may be appreciated, and useful results be derived from it.

Though the danger of suddenly suppressing exanthemata, or morbid evacuations of long standing, has, beyond doubt, been exaggerated, this suppression, however, does not always appear unaccompanied with bad consequences. It was experience then which led the physicians of preceding ages, either to act cautiously with respect to several of these exanthemata and evacuations, or to replace them, when they were suppressed, either by a cutaneous revulsive, or by purgatives. But this practice, it will be said, was based on theoretical ideas. What matters it, if it accord with the observations of facts? Here, besides, as in very many cases, the facts were probably collected first, and it was to explain them that theories were devised. This is not the only time that an ill-interpreted fact was subsequently considered as an inaccurate fact. Thus, to quote but one remarkable instance, the fibrous texture of the brain gave very great support to the hypothesis of the animal spirits. When this hypothesis had no longer credit, persons lost sight of the true anatomical fact which served to support it, and it was only after two centuries of oblivion, that this important fact was in some some measure found again. But let us return to our subject.

M. Guersent has related two instances of dyspnœa, which suddenly became rapidly fatal, without the autopsy having detected any trace of lesion. "I saw," says this excellent observer[*], "two children die of acute intermittent dyspnœa, accompanied by extreme frequency of the pulse, præcordial anxiety and a dry cough. After examining the state of the different organs with the utmost care, I was not able to detect any organic lesion which could cause me to suspect that the lesion was any thing but symptomatic."

56. We might add to the preceding cases, as being one and the same disease in an infinitely less degree, the species of dyspnœa oftentimes observed, in a continued or intermittent form, either in young and plethoric persons, or in persons remarkably nervous. Young persons of both sexes, women affected with irregular menstruation, present very frequent examples of it.

Intense dyspnœa, genuine fits of asthma, have been sometimes seen to come on all at once, after a violent mental emotion, in persons whose breathing had been till then perfectly free. (See article *Asthma*, Dict. de Méd.).

57. Of these different cases of dyspnœa without organic lesion, some appear to us capable of being accounted for by a sudden sanguineous congestion, which, acting on the lung, must necessarily produce a greater or less difficulty of breathing, just as by operating on the brain it occasions dizziness, loss of consciousness, &c. The others appear to us more particularly owing to a special modification of the pulmonary nervous system; these are true neuroses of the lung. How in any other way are we to explain those fits of dyspnœa which came on all at once, either under the influence of a strong mental emotion, or merely because the patients direct their attention to the state of their respiration, so that the best remedy for them is often intense distraction? Interrogate these patients on the sensation which they then experience, they will answer you that at the very moment when, ceasing to be distracted, they come to think of the dyspnœa which they previously felt, they experience within the chest, a sensation of constriction of a particular description, the result of which is an invincible obstacle to the free entrance of the air into the lung, no matter what effort they may make to dilate the thoracic parietes.

We shall not push these considerations farther. If the existence of a sanguineous congestion, or of a neurosis, can explain the disturbance of the respiration, are these same causes sufficient to account for the fatal termination of several dyspnœas? If, notwithstanding so much labour, it has not been yet given us to comprehend thoroughly the mechanism of the functions of the lung, how circumspect should we not be, when we strive to penetrate the mystery of the derangements of such wheelwork! Let us remark, however, that according as the researches of pathological anatomy are carried on with greater care, the number of dyspnœas, without organic lesions to account for them, diminishes more and more. In support of this assertion, we shall relate here the following fact :—

---

[*] Dictionnaire de Médecine, 18 vol. tom. iii. p. 126.

CASE 21.—*Dyspnœa of long standing with dropsy—Absence of any lesion to account for it, either in the heart or in the lungs—Alteration of the diaphragmatic and pneumogastric nerves.*

A young man, twenty-four years of age, having for several years an engorgement of the lymphatic ganglions on both sides of the neck, unattended with pain, presented several of the rational signs of an organic affection of the heart, when he entered the La Charité, the beginning of March 1826.

Face puffed and livid ; purple tint of the lips and alæ nasi, œdema of eyelids ; ascites, and very trifling infiltration of the lower extremities. The respiration was short and hurried, and performed chiefly by the action of the ribs ; lying down in the horizontal posture impossible. The difficulty of breathing increased gradually ; but it was principally during the last year that the dyspnœa became painful to him : it had uniformly increased, in consequence of moist rainy weather. The chest, when percussed, resounded well everywhere ; auscultation detected nothing unusual in the region of the heart, nor in any other point, which could lead us to suspect the existence of a disease of this organ, or of the great vessels. A mucous râle was heard in different parts of the chest ; in other parts a dry sibilous râle ; in other parts again the respiratory murmur was clear, but loud. For several months back the patient had been affected with a cold ; he had never spit blood, and when we saw him, he had an expectoration rather scanty and merely mucous. The appetite was tolerably good, and there was habitually a little diarrhœa, without any abdominal pains. Pulse natural in every respect.

Nothing in this individual proved an organic lesion of the heart, and yet this lesion seemed to be announced by several of the symptoms, such as the appearance of the face, the dropsy, the orthopnœa. This dropsy presented, however, one circumstance not usually met with in cases of disease of heart ; the lower extremities became infiltrated only subsequently to the ascites, and again they were very little so. We know, on the contrary, that dropsy depending on a disease of the heart, begins in the majority of cases with œdema around the ankles.

Auscultation did not discover the cause of the dyspnœa either in the heart or lungs.

The following therapeutic means were employed : local and general bleedings ; applications of blisters to the chest and lower extremities ; diuretic drinks ; frictions with tincture of digitalis, and squill wine.

During the following six weeks the state of the patient underwent no change ; there was constant orthopnœa ; the respiration was panting the moment the patient attempted to leave the bed for any time. Auscultation, which was frequently practised, gave us no new information ; the cough neither increased nor diminished, nor was it very severe. We never observed any fever, properly so called. Nothing as yet indicated the approaching death of this person, when, without any appreciable change in his state, he was suddenly seized on the 1st of May with extreme dyspnœa ; a tracheal râle soon came on, the breathing became embarrassed, as in apoplectic patients, and in a few hours he died.

Post mortem. Nothing remarkable in the brain, or spinal cord. Heart and vessels natural. A small number of miliary tubercles scattered through the pulmonary parenchyma, which was in general engorged, but healthy and full of air. Some old cellular adhesions united the pleura costalis and pulmonalis of the two sides. The anterior mediastinum was occupied by a large mass of tuberculous lymphatic ganglions. Through the midst of this mass the two diaphragmatic nerves passed; it was impossible to trace them through the numerous ganglions which surrounded them and pressed them on all sides. They reappeared not far from the diaphragm; and from the place where they were disengaged from the ganglionic mass to their distribution in the diaphragm, these nerves were remarkable for their greyish colour, similar to that often presented by the optic nerve, which enters an eye for a long time wasted. In the abdomen numerous tubercles were scattered over the small intestine; some small and superficial ulcerations for the extent of some inches above the ileo-cœcal valve; a tubercle the size of a hazel-nut in the cortical substance of one of the kidneys; cellular adhesions between the diaphragm and liver, the tissue of which was healthy; the spleen was soft and tolerably large; considerable effusion of serum into the peritoneum; and, in fine, anteriorly to the vertebral column, an enormous mass of lymphatic ganglions which degenerated into tubercles, which forcibly compressed on the one hand the vena cava, and on the other hand the vena portæ, of which they surrounded the principal abdominal branches, as well as the trunk.

On each side of the neck, from the edge of the jaw to the clavicles, there was found a large chain of tuberculous lymphatic ganglions, like those of the thorax and abdomen. Several were interposed between the vessels and the nerves of the neck, and the carotid artery and jugular vein were found to be separated by these ganglions. With respect to the pneumo-gastric nerve, some inches below the point of origin of the superior laryngeal nerve, it became lost in a mass of ganglions, in the midst of which it was impossible to find it. It reappeared a little above the level of the clavicle, and was remarkable on both sides for its *flatness;* it supplied, as usual, the recurrent nerves. In the remainder of its extent, and particularly in those of its branches, which constitute a great portion of the pulmonary plexus, it presented nothing remarkable. Each axilla was occupied by a tumour the size of a large orange, which was formed of an assemblage of tuberculous lymphatic ganglions.

Besides the cause of the dropsy, which here seemed to reside in the pressure on the great venous trunks, this case is interesting, in consequence of the state in which we found several of the nerves which contribute to the functions of respiration, the diaphragmatic nerves on one hand, and the two cords of the eighth pair on the other. M. Berard, sen., had already related the case of a person in whom no other lesion was found, to account for the great dyspnœa experienced during life, but a tumour developed in the substance of one of the diaphragmatic nerves. Here not only the two diaphragmatic nerves had undergone considerable alteration, which was sufficiently characterised by the greyish colour, and real atrophy of their inferior extremity; but also the two pneumo-gastric nerves were seriously compromised, as was manifestly proved by the flattening which they presented on making their exit from the lymphatic tumour, in the midst of which it was impossible to trace them. Now, if the experiments of physiologists have proved, that after dividing the eighth pair of nerves, hematosis ceases to be duly performed, the lungs become engorged, and death supervenes at the end of a few days, should not the fact I have just cited be ranked in this order of facts? There was here a gradual diminution, and finally a cessation of the influence exercised by the eighth pair on the changing of venous into arterial blood; thence the constantly increasing dyspnœa, &c. If this cause of dyspnœa be not admitted, we must then admit that the very great difficulty of breathing observed in this patient existed without our being able to find in the dead body any lesion which could account for it; for I do not think that the tubercles, very small and very few as they were, could, in any way, account for this dyspnœa, which may be compared in intensity to that which manifests itself in the course of the most serious organic affections of the heart.

SECTION II.

OBSERVATIONS ON PLEURO-PNEUMONIA.

58. INFLAMMATION of the pulmonary parenchyma is at this day one of the diseases best known. In the great majority of cases, its diagnosis is simple, and the treatment not at all complicated. However, the history of pneumonia still presents some gaps to be filled up, or at least some points to which it may be useful still to direct attention. Existing often without being accompanied with all the symptoms which usually characterise it, and often too, not revealing its existence by any of these symptoms, pneumonia then is of very difficult diagnosis. This latent form was, no doubt, described by Stahl and his successors; but new observations on this subject seem to us to have become necessary by the discovery of the method of auscultation.

In certain cases, on the contrary, several of the symptoms of pneumonia appear, though there is no real inflammation of the pulmonary parenchyma; and with respect to diagnosis, prognosis, and treatment, this description of pseudo-pneumonia must be carefully studied. Pneumonia may complicate other affections, or be complicated by them; this inflammation then often puts on, as one may say, a peculiar physiognomy, through which we must accustom ourselves to recognise it, in order to separate the phenomena which depend on it, from those which are foreign to it. Perhaps the attention of physicians, with respect to diagnosis and prognosis, has not yet been sufficiently directed to inflammation of the upper pulmonary lobes. Perhaps sufficient stress has not been laid, either on the double pneumonias, which attack the two lungs at one and the same time, or on the circumscribed pneumonias which exist only in some isolated lobules. After the species of pneumonias having been too much multiplied in former ages, have we not now fallen into the opposite excess? Must we, for instance, erase from the nosological chart, bilious or adynamic pneumonias? Must we reject in all cases the existence of a general inflammatory state, which precedes the pneumonia, as in rheumatism this general state often precedes the articular inflammation?

Pneumonia is one of the diseases, whose favourable termination seems to coincide most manifestly with the appearance of those disturbing movements of nature designated by the name of *crises;* modern observers seem to us to have neglected somewhat this important point of the history of pulmonary inflammations. The termination of pneumonia, either by gangrene or by abscess, are not yet sufficiently known: even their existence is problematical with some persons: science still requires on this subject new observations and impartial discussions. In fine, the treatment of pneumonia, so simple, and so well traced in a number of cases, is, in several others, obscure and uncertain. It would be important accurately to determine by clinical examples, how far blood-letting may be carried with beneficial results; at what period, or rather under what conditions we should abstain from it, and substitute revulsives for it; in what circumstances we may even have recourse to a treatment more or less tonic?

In the cases to be now detailed we shall dwell on these different points.

CHAPTER I.

PLEURO-PNEUMONIA ANNOUNCED BY THE AGGREGATE OF ITS CHARACTERISTIC SYMPTOMS.

ARTICLE I.

PLEURO-PNEUMONIA IN THE FIRST STATE.

Case 1.—A factor, thirty-three years of age, felt on the evening of the 1st of February 1822, a pain below the left breast. In the night he experienced alternations of cold and heat, and coughed very much.

On the morning of the 3rd of February, the second day of the disease, he presented the following state:—crepitous râle posteriorly on the left, from the level of the inferior angle of the scapula to the base of the thorax; inspiratory murmur loud and clear every where else. Sonorousness of the parietes still retained. Sputa red, transparent, viscid, still detached from the vessel by inclining it. Cough not frequent; pain below the left breast, increased by percussion, cough, and the inspiratory movements. Respiration high, accelerated, diaphragmatic. Pulse frequent and full; skin hot and dry. Digestive functions intact; the diagnosis; *inflammation of the lower lobe of the left lung in the first stage.* A bleeding to sixteen ounces was immediately ordered.; in the night another bleeding to twelve ounces; twenty-four leeches were applied to the left side.

On the next, i.e., the 3rd day, there was a perceptible improvement; breathing more free; pain of side nearly gone; nothing heard on the left but a little crepitous râle mixed with the inspiratory murmur which announces the free entrance of air into the pulmonary vesicles; the sputa had lost their viscidity and reddish colour. The blood obtained at the two bleedings presented a very different appearance; the blood taken in the morning presented a clot floating amidst a quantity of serum, and covered with a dense, thick, buffy coat; the blood drawn in the night was formed, on the contrary, by a large clot without the buffy coat, and without any serum around it. The two bleedings were performed, however, in the same manner; but when the first was employed, there was intense inflammation; it had considerably diminished at the time of the second bleeding. Should we not connect the different appearance of the two bleedings with the difference in the state of the lung? Be that as it may it was evident that under the influence of a powerfully antiphlogistic treatment, the pulmonary inflammation had retrograded; there was no longer occasion to have recourse to an active treatment, and it was to be hoped that by the use of emollients, &c., the pneumonia would soon be completely resolved; but, towards evening, the symptoms became worse, and on the morning of the fourth day, we found the breathing very much hurried, the red sputa returned, and the inspiratory murmur entirely masked posteriorly on the left by a strong crepitous râle; the pulse was very frequent and hard; a bleeding to sixteen ounces was instantly adopted. The blood, as that of the first bleeding, was covered with a thick coat.

However, on the 5th day, no improvement took place. On the 6th the patient in a state of half-orthopnœa, could scarcely pronounce a few words with a panting voice; he expectorated with difficulty red and very viscid sputa: the same râle continued posteriorly; the sonorousness of the thoracic parietes was still preserved. (Twenty-four leeches to the chest; two blisters to the legs.) In the course of the day the patient was in a state of extreme anxiety; he complained of a smothering. In the night, the commencement of the 7th day, the skin till then dry, became moist, and was covered all the night with a copious sweat, which still continued the following morning. The state of the patient was wonderfully improved; the respiration was but very little embarrassed; the expectoration was merely catarrhal, pulse scarcely febrile; a marked crepitous rale was still heard.

On the eighth day, this râle, succeeded partly by the natural murmur of respiration, was no longer heard, except in some isolated points. The patient found himself very well, but though he no longer complained of dyspnœa, still we observed a slight acceleration in the inspiratory movements, which was in accordance with the signs furnished by auscultation. The pulse retained a little frequency without the skin being hot. The sweats had ceased for the last several hours. In a few days he was convalescent, and soon left the hospital.

The inflammation of the pulmonary parenchyma does not appear, in this case, to have passed the first stage, or that in which there is only inflammatory engorgement, without hepatisation. We observed some crepitous râle, without a diminution in the sonorousness of the thoracic parietes. If there were hepatisation, the sound would have been dull. Here is one of the cases where we cannot deny the great utility of auscultation; without it the diagnosis would have been much less precise, and the prognosis more uncertain. By the help of auscultation we were able to follow the different periods of increase and diminution in the inflammatory engorgement. We were aware that it was less, according as the crepitous râle was gradually replaced by the natural murmur of inspiration.

The other symptoms also confirmed the signs furnished by auscultation; they were ameliorated every time the râle diminished; and became worse every time this râle, by increasing, masked the inspiratory murmur.

An obvious amendment took place from the third day after the copious bleedings then employed; but as if, in spite of our therapeutic means, diseases were subjected in their course to certain laws of duration, which we cannot change, nature in some measure resumes her rights, and up to the seventh day the pneumonia ceased not to announce itself by symptoms more and more severe. The bleeding then resorted to had no beneficial result. The sixth day particularly, the prognosis seemed to be very unfavourable: the extreme embarrassment of the breathing, the patient's state of anxiety, were of very bad import. The seventh day, every thing was changed: a copious sweat took place; from that time the alarming symptoms disappeared, and the pneumonia soon proceeded towards resolution. Can we rank among the number of critical phenomena the fluxionary movement which took place in the skin?

This case tends to confirm two points of the ancient doctrine of crisis: first, the exasperation of the symptoms before the appearance of the crisis; secondly, the period of the disease at which this crisis appears, the seventh day. It shows, in fine, that an active treatment does not always prevent the occurrence of crisis.

CASE* 2.—A labourer, thirty-five years of age, entered the La Charité, labouring under slight articular rheumatism and acute bronchitis. Very little fever. Two bleedings within the space of forty-eight hours, caused the rheumatic pains to disappear; but the bronchitis did not yield. During the three or four following days nothing was given but emollient drinks. At the end of this time the patient having been exposed to a cold draught of air, fever re-appeared, as also dyspnœa. Cough more frequent. The next day these symptoms continued; they were considered as the result of an exasperation of the bronchitis: fifteen leeches were applied to the lower part of the sternum. On the 10th, the difficulty of the breathing still increased, and the sputa became viscid and reddened. We were from thence set aright with regard to the real cause of the disease; we no longer doubted that the inflammation of the bronchi must have extended to the pulmonary parenchyma. Auscultation detected some crepitous râle in different points of the chest, both on the right and left. This râle existed only at isolated points of small extent, and in the intervals between them the entrance of the air into the pulmonary vesicles was distinctly heard. The sonorousness of the thoracic parietes was nowhere diminished. He was bled to sixteen ounces.

---

* We shall omit a few of the less interesting cases contained in the original.—TR.

The 11th and 12th of April (the third and fourth day of the presumed invasion of the pneumonia), the râle was heard in a greater number of points, without the sound obtained by percussion becoming more obscure. The sputa acquired greater viscidity, and a redder tint; the fever was intense, dyspnœa moderate.—He was again bled on the 11th to eight ounces, and on the 12th a blister was applied to the fore part of the chest. The blood drawn on the 10th and 11th was covered with a thick coat.

On the 13th, the fifth day, the skin till then dry, began to be covered with a gentle moisture.

On the sixth and seventh, continual sweats. State of the symptoms of pneumonia stationary.

On the eighth, continuance of the perspiration; diminution of the viscidity and reddish tint of the sputa; breathing less embarrassed; cough less; crepitous râle less extensive; pulse full, undulating, not frequent.

On the ninth, cessation of the sweat; return of the sputa to the catarrhal state; no longer any embarrassment of the respiration, which however is still a little hurried; merely a very weak crepitous râle is heard in some points.

Tenth and eleventh days, this râle continues, with a little frequency of pulse. Patient now presents merely the symptoms of a simple bronchitis. To his emollient drinks some kermes is added, and a pint of decoction of the root of polygala.

On the tenth, the crepitous râle completely gone; the cough diminished progressively, and the patient soon left the hospital in perfect health.

In this patient, the commencement of the pneumonia was not the same as in the preceding. It was not announced by any pleuritic pain, nor any shivering, and it was at first thought that the bronchitis was merely exasperated by the cold to which the patient had been exposed. The existence of pneumonia, however, was soon indicated by the appearance of the sputa. This pneumonia presented another peculiarity; it did not, as is usually the case, occupy a determinate portion of the lungs; it was in some way disseminated over a crowd of isolated points, between which the parenchyma retained its healthy state, as auscultation showed us. It seemed that in extending from the bronchial mucous membrane to the pulmonary tissue, the irritation affected only the portions of this tissue which surrounded the most inflamed bronchi. There was, really, in this case a multitude of partial pneumonias.

Here, again, the appearance of a copious sweat towards the fifth day, coincided with an improvement in the symptoms; but instead of lasting only for some hours, as in the subject of the first case, and of bringing on a rapid improvement in the disease, this sweat lasted for nearly four days, and during this time the amendment was slow and progressive. After all the rational symptoms of pneumonia had disappeared, there still remained a little râle, a certain sign that the resolution of the inflammation was not yet complete. This residue of the râle disappeared on the twelfth day. The inflammation of the bronchial mucous membrane, which existed previous to the pneumonia, survived it still for some days. The sputa examined at these different periods, afforded information not less positive than auscultation regarding the state of the organs.

Case 3.—A woman thirty-three years of age had walked very much in very hot weather in Paris, the beginning of June, 1822. Whilst the body was inundated with sweat she drank an enormous quantity of water. She soon felt general illness, headach, &c., then her appetite was lost, and a copious diarrhœa set in. This diarrhœa lasted for eight or ten days; the patient kept her room, and took nothing but diluent drinks. At this time the purging ceased, and was succeeded by intense pulmonary catarrh. The patient entered the hospital in great prostration of strength.

When we saw her, for the first time, she was tormented by a frequent cough, with expectoration of frothy, transparent, colourless, and very viscid sputa. Inspirations more short and frequent; the chest, when percussed, sounded well in every part; respiration loud, but clear. Pulse frequent, and compressible; skin hot and dry. Tongue covered with a thick, yellowish coat; frequent nausea, with burning thirst; abdomen painful on pressure; diarrhœa succeeded by obstinate constipation. (Emollient ptisans and lavements.)

The next day (June 15th) dyspnœa increased; sputa presented a slight reddish tint; chest still sounded well everywhere, but some crepitous rale existed on the right, posteriorly, and laterally nearly over the entire extent of the lower lobe; in the other parts of the chest the air entered into the pulmonary vesicles with force and clearness. Features became sharpened, abdominal pain still continued; pulse more full. Thus the inflammation, which the preceding day seemed to be only in the bronchi, extended to the pulmonary parenchyma, and the co-existing irritation of the digestive passages had not lessened. (Bleeding to twelve ounces.) The blood presented a large, soft clot, covered with a thin greenish coat.

A short time after the bleeding, the skin, which till then was dry, became moist, the oppression lessened, and the pulse became somewhat soft.

On the 16th there was a perceptible improvement; crepitous râle less, and the natural respiratory murmur was better heard. The sputa, still viscid, lost their reddish tint; the pneumonia seemed to progress towards a resolution. On the other hand the tongue was becoming clean, the abdomen had lost its sensibility; an alvine evacuation, of favourable appearance, had taken place. Fever still continued. (Emollient drinks.)

On the morning of the 17th the same state. In the evening a return of the symptoms of pneumonia; cough, dyspnœa, red sputa. In the night, slight delirium.

On 18th, great oppression; once more a well-marked crepitous râle; skin again resumed its dryness and burning heat.

From 19th to 22nd, state of the pneumonia stationary; considerable stupor; tongue dry; abdomen tense and painful.

From 22nd to 23rd, a copious sweat appeared; in the course of the 23rd, a manifest amendment of all the symptoms; disappearance of the red tint and viscidity of the sputa; dyspnœa less; râle diminished; pulse less frequent; intelligence clear; tongue moist.

From this moment the state of the patient improved every day; the natural murmur of respiration returned gradually; no more sweats. On the 29th, full convalescence; still foul bitter taste in the mouth; no return of appetite; frequent borborygmi. A purgative was given which brought on copious alvine evacuations. The symptoms of gastric and intestinal disorder disappeared, and the patient left the hospital in good health about the 10th of July.

This case presents us with another new shade of pneumonia in the first stage. The subject of it, after having indulged in violent exercise under the influence of a very elevated atmospheric temperature, first presented the symptoms of mere lassitude. The entire system then appeared to be affected; and to affirm that this state of general illness was the sign of suffering in one particular organ, of a first degree of gastro-enteritis, for instance, would be, in our opinion, to go beyond facts. But the disease soon became really localised; the severe diarrhœa which came on, soon announced that the irritation was fixed on the intestines. A little after another organ was affected; but at the same time that the symptoms of bronchial inflammation became marked, the symptoms of intestinal irritation were seen to diminish and disappear: in fine, the signs of pneumonia presented themselves. The precise moment of the attack of this pneumonia it would be difficult to determine; no shivering announced its commencement, no pleuritic pain accompanied it, it insensibly took place of a simple pulmonary catarrh. These circumstances assimilated this case to the preceding; in the latter the crepitous râle preceded the appearance of the pneumonic sputa. Here, on the contrary, the sputa were already very viscid, before auscultation had yet ascertained any thing; but as this great viscidity is often met in very intense bronchial inflammations, we could not affirm that there was pneumonia until the expectoration became reddened; then only was the crepitous râle heard. The chest constantly remained sonorous.

A perceptible amendment followed the bleeding; the gentle moisture which immediately followed the blood-letting was a very favourable phenomenon. However, as in the subject of the first case, the pneumonia, which had commenced to retrograde, soon became once more exasperated. At the same time the functions of the brain were disturbed, the tongue dry, &c. Thus the organs of the cranial, thoracic, and abdominal cavities, were simultaneously affected. No other active treatment was then employed except revulsives applied to the thorax and lower extremities. The disease remained for some time stationary; then a copious sweat appeared a second time. A sudden and permanent amendment coincided with this appearance.

We may remark the different appearance of the blood in this woman, and in the subjects of the preceding cases. In the woman, the clot was softer, and covered with a much thinner coat. The symptoms which manifested themselves in the part of the primæ viæ, during convalescence from the pneumonia, are also worthy of notice. We see they disappeared in consequence of the administration of a purgative.

Case 4.—A man, forty-six years of age, entered the La Charité, January 21, 1820. Exposed to cold and moisture for the entire of the 18th, he had some shivering in the evening, felt a burning heat all night, and raved on the 19th. This same day he began to cough. 20th, third day, intelligence perfect, but increase of cough, slight dyspnœa, and fever. When we saw him on the morning of the fourth day, his state was as follows:—Respiration hurried; oppression; cough frequent, without pain, with expectoration of reddened, viscid, and transparent sputa. (These characteristic sputa existed only since the preceding day.) Crepitous râle, not entirely masking the inspiratory murmur beneath the two clavicles, from these to the level of the breast, in the hollow of the two axillæ, and in the two supra-spinous fossæ. Everywhere else the respiration strong and clear; sonorousness of the chest retained; can lie on his back; pulse frequent and full; skin hot and dry; tongue whitish; constipation. Diagnosis; *inflammatory engorgement of the summit of the two lungs.* (Bleeding to sixteen ounces; sinapisms to the legs in the evening; ptisans and emollient lavements.) Blood consisted of a large clot, without serum, covered with a thick coat.

The fifth day, the crepitous râle more completely masked the inspiratory murmur. It was audible on the right in the infra-spinous fossa; the two anterior sides of the chest appeared less sonorous; dyspnœa greater; sputa more viscid. Thus, on both sides the inflammation had made progress, and seemed to proceed towards hepatisation. Two bleedings were prescribed, one in the morning to twelve ounces, and the other at night to eight ounces. Blood coated with a large clot without serum.

The sixth day, same state. (Two blisters to the thighs.)

On the seventh day, oppression greater; speech panting; perceptible diminution of sonorousness below the two clavicles; weak crepitous râle, but without an admixture of the inspiratory murmur in the same points where it was heard on the preceding days. Sputa red, combined into one jelly-like mass, which is detached with difficulty from the vessel. Pulse very frequent, and very compressible ; skin still dry ; yellowish tint of the face. (Two blisters to legs ; a pint of decoction of polygala.) On the eighth day, in the morning, delirium ; alteration of the features. Death in the evening.

Post mortem. The upper lobe of each lung presented a red vermilion colour, which contrasts with the greyish colour of the other lobes. From these same upper lobes an immense quantity of red frothy serum flowed on making an incision ; their tissue more easily torn than that of the other lobes, and hardly crepitating, still floated on water. In other parts the pulmonary parenchyma was dry, except posteriorly, where it presented a little cadaveric engorgement ; red colour of the bronchial mucous membrane of the upper lobes. Old cellular adhesions of the pleuræ ; cavities of the heart filled with black liquid blood.

In this double pneumonia it may be remarked that it was the upper lobes which were attacked by the inflammation, and we think we have ascertained that, cæteris paribus, inflammation of these lobes, is more serious and more formidable than even a more intense inflammation of the upper portions of the pulmonary parenchyma. It is very probable that, had the inflammatory engorgement existed in the two inferior lobes, the case would not have been fatal.

Here, besides, the pulmonary tissue was very near the state of hepatisation ; it had already lost a little of its consistence : when pressed between the fingers it scarcely crepitated, and in this state it resembled very much the sensation experienced on pressing the lungs of a fœtus which has not respired. This intermediate state, between simple engorgement and hepatisation, had been announced by the greater and greater diminution of the râle, without the simultaneous return of the natural souffle of respiration, as also by the diminution in the sonorousness in the thoracic parietes, without there being, however, real dulness. In fine, the great viscidity of the sputa was an additional sign that the pneumonia had a tendency to pass from the first to the second stage.

It may be readily understood how little to be depended on is the information furnished by percussion, when, as here, the sonorousness diminishes equally at once on the two sides of the chest, without there yet being well-marked *dulness.*

The attack of the pneumonia was not announced by any pleuritic pain ; the delirium which appeared almost at the commencement of the disease, and which disappeared according as the signs of pneumonia were more marked, reappeared the last twenty-four hours of the patient's life. It cannot be accounted for by any appreciable lesion of the encephalon. In this particular case, the aphorism of Hippocrates is confirmed : *a peripneumonia phrenitis, malum.*

ARTICLE II.

PLEURO-PNEUMONIA IN THE SECOND STAGE.—(RED HEPATISATION.)

CASE 5.—A carpenter, thirty-two years old, of a delicate frame, married about fifteen days, supped as usual on the evening of the 20th April, 1822. An hour after, he was seized on a sudden with a violent shivering, which lasted all the night. On the morning of the 21st, he felt a pain first in the top of the left shoulder, which soon extended to all the left side of the chest ; this pain was increased by coughing and by deep inspirations ; it became insupportable when he lay on the left side ; at the same time dry cough and sweats at night. During the seven days following the patient kept the bed, and merely drank some demulcent drinks. The pain of side continued; the breathing became more and more embarrassed; the sputa were tinged with blood. On the 27th, the seventh day, he entered the hospital, and was bled immediately. He raved during the night. On the morning of the 8th day, he presented the following state:—Inspirations short and frequent; constant cough, with expectoration of a considerable quantity of red, viscid, transparent sputa. The pain less acute than on the preceding days, was felt on percussion over all the left side of the chest, from the axilla to the last ribs. He lay on his back. The chest, when percussed, yielded a dull sound laterally and posteriorly over all the extent nearly of the lower lobe of the lung; in some points of this same extent, a little crepitating râle was heard, without any admixture of the inspiratory murmur. From this double information, afforded by percussion and auscultation, it was concluded that the lower lobe of the left lung was partly engorged, partly hepatised. Pulse frequent, and tolerably resisting; skin hot and moist. (Some sweats took place every evening from the commencement.) Tongue whitish; loss of appetite; thirst moderate; constipation. (Bleeding to twelve ounces; thirty leeches to the left side; emollient ptisans.) The day passed off very well; in the evening there was a profuse sweat; delirium at night.

The morning of the 9th day, the delirium still continued, but the breathing was easier than the day before; the sputa contained less blood; the crepitous râle, perceptibly stronger and more extended than on the preceding day, seemed to announce that the hepatised parts of the lung passed again into the state of simple engorgement; fever less. With respect to the pneumonia, the patient was evidently better; but the existence of delirium announced a cerebral congestion, so much the more alarming, as it should have diminished, had it been merely sympathetic of the thoracic affection. Sufficient blood had now been taken, considering the delicate subject we had to do with. Two blisters were applied to the legs, as revulsives at one and the same time from the head and chest. The delirium ceased accordingly towards evening, and did not reappear.

On the 10th day, the same state. On the 11th and 12th days, the sound of the left side was less dull, and the crepitous râle was very well marked there. The patient no longer feeling any pain, could take a deep inspiration with sufficient ease; the sputa a little reddened, repassed to the catarrhal state; the fever was moderated; in a word, every thing announced that resolution was taking place. On the 13th day, a blister was applied over the left side of the thorax. On the 14th and 15th days, we began to hear the natural sound of the respiration, mixed with the crepitous râle. Thenceforwards the dull sound began to disappear, the sputa were catarrhal. On the 16th, the natural sound of the respiration much more clear than on the preceding day, was no longer mixed, except and at some points and at intervals, with some crepitous râle; the pulse retained a little frequency, without any other sign of fever. There was no longer any sweats in the evening for the last three days. On the 17th day, the murmur of the respiration equally clear and natural every where; convalescence.

Let us fix our attention for some moments to the signs furnished here by auscultation and percussion. There was at first a dull sound, and at the same time a weak crepitous râle, without any admixture of the inspiratory murmur. From these signs we deduced the consequence that there was already hepatisation of the pulmonary tissue. At a later period, when the diminution of the fever, the dyspnœa less and less intense, the return of the sputa to the catarrhal state, the progressive re-establishment of the sonorousness of the thoracic parietes, announced the resolution of the pneumonia, auscultation accurately determined in a manner all the periods of this resolution, it showed us every day the pulmonary tissue, repassing by little and little from the state of hepatisation to the state of simple engorgement. The greater or less intensity of the crepitous râle, its greater or less mixture with the physiological murmur of respiration, apprise us of these different states of the lung with almost mathematical precision. If the crepitous râle is very strong, without mixture of the inspiratory murmur, we may be certain that in every part of the lung wherein it is heard, there is only simple engorgement, but that this engorgement is very considerable. If, with the râle, we still hear the murmur which results from the entrance of air into the pulmonary vesicles, we should conclude that there is still but simple engorgement, but that this engorgement is less considerable, and that several parts of the lung are still sound. There is a degree where the râle is no longer heard except in some isolated points, at long intervals, or else in a continued way, but so feeble, that much attention and practice are required to distinguish and appreciate it, amidst the murmur of the pulmonary expansion, which predominates in proportion as the râle diminishes; then the inflammatory engorgement is very slight or very circumscribed. At other times though the crepitous râle becomes more and more weak, the murmur of the pulmonary expansion is not re-established; then there is a transition from the first to the second degree, a mixture of engorgement and hepatisation. It rarely happens that, in the case where this hepatisation itself is considerable, a little crepitous râle is not still heard. In this latter case, the entrance of the air, and the resonance of the voice in the bronchi undergo modifications, from whence new signs result, on which we shall have an opportunity of dwelling hereafter. When the hepatised portions of the lung once more become permeable to the air, we are apprised of it by the return of the crepitous râle, or by its greater intensity, if it has continued. There is one circumstance which merits all the attention of the practitioner; it is, that very often the murmur of the pulmonary expansion remains mixed with a little crepitous râle a long time after all the other signs of the pneumonia have disappeared. What are we to conclude from this fact? Our inevitable conclusion must be, that the portions of lung which have been inflamed, ordinarily return to their natural state much more slowly than could have been imagined before auscultation was practised; thence the facility of relapses in convalescence from pulmonary inflammations; thence all the great precautions necessary, as long as the râle continues. If they be neglected, the disease, having become latent in this latter period of its existence, may return unexpectedly to the acute stage; or else, as most frequently happens, a chronic inflammation will be kept up in the lung, and the tuberculous degeneration of this viscus will be the result, if the patient be at all predisposed to it.

Let us now consider some other remarkable circumstances connected with this case.

The sweats here were not critical: they appeared from the very first day of the disease, and continued to its decline. They might have favoured the successful termination of the pneumonia. This termination took place gradually, without being accompanied with any crisis properly so called.

The pleuritic pain might have been regarded, in consequence of its original seat (in the shoulder), as a mere rheumatic pain; but the intense shivering which preceded its appearance indicated its nature. It was by the absence or presence of the initial shivering that Stoll endeavoured to distinguish, in many cases, rheumatism fixed on the thoracic parietes, with cough and fever, from real pleuritis. How has this excellent observer said that one might draw a distinctive character from the state of the tongue? According to him it is moist in rheumatism, and *dry* in inflammation of the pleura. Nothing certainly is more inaccurate. This pain when transferred from the shoulder to the chest still presented in our patient an unusual circumstance. Instead of developing itself in a circumscribed point, on the level of, or below the breast, as is most usually the case, it extended to all the left side of the chest. It would, in my opinion, be hard enough to say, why in the greater number of cases, it is not so; why a general inflammation of the pleura does not mark its existence more frequently than *a painful stitch.*

The delirium, which appeared for several days in succession, yielded with rare promptitude to revulsives applied to the lower extremities at a period when re-action appeared no longer to be dreaded. This delirium did not exhibit any alarming character; and if one of our preceding cases confirmed the aphorism of Hippocrates, with respect to the danger of delirium in pneumonia, the present case disproves its uniform and constant accuracy. Besides, we know there are some persons in whom the slightest affection is complicated with delirium. Such perhaps was the case with our patient; his constitution altogether seemed to announce a great susceptibility of the nervous system, a susceptibility also which might have been increased by his recent marriage.

Case 6.—A tailor, twenty-one years of age, was affected with simple coryza on the 2nd of March, 1824. The day after, at nine o'clock in the morning, he was seized, without any previous illness, with a stitch in the side below the right breast; in the day the pain continued, he had dry cough, slight dyspnœa, fever, sweat in the evening and at night. He entered the La Charité on the evening of the 5th. His state on the 6th (fourth day from commencement of the stitch in the side): sound dull in the right posteriorly through almost all the extent of the lower lobe. In this same part a feeble crepitous râle, without mixture of the murmur of pulmonary expansion; every where else the respiratory murmur strong and clear; cough frequent, with expectoration of reddened sputa, combined into a jelly-like mass, which cannot be detached from the vessel when the latter is inverted. Pleuritic pain perceptible only when percussion is employed. Respiration not appearing to the patient much embarrassed, though the inspirations are short and frequent. Pulse frequent and full, skin hot and dry (there was no more sweating since the 3rd March). We thought that there was already hepatisation of the pulmonary tissue (large bleeding). Had some sleep at night, and slight transpiration.

On the fifth day there was perceived in the right, merely a very slight râle, without any murmur of pulmonary expansion; sound more dull than on the preceding day; every time the patient inspires, the entrance of the air into the bronchi of the inflamed portion of the lung, is accompanied with a kind of souffle, entirely different from the murmur which results, in a healthy person, from the entrance of air into the pulmonary vesicles. It appeared that the latter having become impermeable, the column of air, which could no longer penetrate beyond the large bronchi, vibrated with more force against their parietes, whence resulted a respiratory murmur, very distinct from that which is heard in the portions of lung which remained sound. Finally, in the same hepatised part, the voice of the patient had a peculiar character, which was neither pectoriloquy, nor any of the varieties of ægophony; *it resounded more strongly than elsewhere* *. No change in the other symptoms (bled to twelve ounces). The blood of the two bleedings was coated.

On the sixth day, auscultation and percussion yielded the same information.—Dyspnœa more considerable, sputa very viscid, and expectorated with great difficulty; pulse frequent and weak; great prostration. The increased difficulty of breathing induced M. Lerminier, notwithstanding the weakness of the pulse and the apparent state of general debility, to prescribe a third bleeding of eight ounces. It was coated as the preceding. Two sinapisms were then applied to the legs. (Expectorants of ipecacuanha and kermes combined, were given with demulcents.) We then left him with very unfavourable hopes of his state. In the night, the skin which, with the exception of the first day, had remained dry, or presented but very slight moisture, was covered with an abundant sweat, which still continued on the following morning.

Seventh day: a remarkable change now appeared in the state of the patient. A well-marked crepitous râle, mixed with the murmur of pulmonary expansion, had replaced the *bronchial respiration*, which the day before was still heard over all the inferior lobe of the right lung. The peculiar resonance of the voice in this same point had disappeared. The sputa had lost a considerable part of their reddish tint and their viscidity. The respiration was more free, the expression of the countenance more natural, pulse less frequent and less weak. The sweat continued till evening

---

* This phenomenon was subsequently designated by Laennec under the name of *Bronchophony*.

Eighth day: crepitous râle mixed with the natural murmur of respiration; both sides of the chest nearly equally sonorous. Sputa of simple catarrh; moderate frequency of the pulse; heat of skin natural. On the following days, total disappearance of the crepitous râle, which gave way to the natural respiratory murmur. Cessation of cough, and cure.

Unequivocal signs announced in this patient hepatisation of the pulmonary tissue. It existed already for four days; but as yet it was but of slight extent, or incomplete in several points. The fifth day it was more considerable. We have carefully described, and endeavoured to explain the two signs which indicated this dangerous progress, namely, the peculiar nature of the respiratory murmur, and the resonance (retentissement) of the voice. To express by a generic term the change which the respiratory murmur underwent in the hepatised lungs, we propose to call this murmur, so modified, *bronchial respiration*, in contradistinction to the respiratory murmur which is heard in the healthy state, which announces the free entrance of the air into the pulmonary vesicles, and which we would willingly call *vesicular respiration.* These phenomena coincided also with the *dulness* of sound, and great viscidity of the sputa. The difficulty of the respiration did not at first appear proportioned to the severity of the pulmonary lesion; but the dyspnœa soon became considerable, and from that time an unfavourable prognosis must be formed, which was still further confirmed by the bad appearance of the countenance, and the character of the pulse. However, in the space of twenty-four hours, at the same time that a very copious sweat manifested itself, the appearance of every thing changed; the inflammation, whose progress could not be arrested by a very active antiphlogistic treatment, retrograded with extraordinary rapidity from the second towards the first stage, and very little time was necessary to accomplish the resolution of so serious an inflammation. To deny that in this case critical sweats terminated the pneumonia, would be, we think, to deny evidence. We find here all the characters of a true crisis; greater exasperation of the disease, then a sudden and spontaneous appearance of a fluxionary movement towards the skin, and at the same time a manifest improvement in all the symptoms. This sudden change in the disease is one of the characters of critical phenomena. No doubt the pneumonia may have terminated favourably without any crisis having taken place; but this termination might probably have been much slower, and we would not have seen in the space of forty-eight hours, an intense hepatisation of the lung give place to a slight engorgement, which also rapidly disappeared.

Let us not forget to note the period of the crisis, on the night of the 6th to the morning of the 7th day. It might have been favoured by the mixture of ipecacuanha and kermes which the patient had taken the day before.

The stitch in the side was not here preceded by shivering.

Case 7.—A porter, fifty-three years of age, felt on a sudden in his chamber, on the 17th of December, an acute pain in the anterior and right part of the chest, from the third to the seventh or eighth rib. This pain was very much increased in each inspiratory movement; it continued all night. On the 17th and 18th hot cloths and emollient cataplasms did not mitigate it. The patient coughed frequently without expectorating. On the 19th he felt, for the first time, in the afternoon, a violent shivering, which was followed by great heat, without sweat. On the 20th, pain less; cough frequent and dry: 21st, same state: 22nd, sputa tinged with blood. Having entered the La Charité on this day, he presented the following state:—

Face pale; movements free; can lie only on back or right side: cough almost constant; sputa combined into a transparent, yellowish mass, detached from the vessel, when inclined. Pain only felt when he coughs, or makes deep inspirations. The patient does not feel his breathing embarrassed, though it is short and frequent. Percussion detects a diminution of sonorousness, to the extent of three or four fingers' breadth below the right clavicle. In this same extent, some crepitous râle is heard; every where else the breathing is distinct, but strong; pulse frequent and sufficiently full; thirst, loss of appetite; abdomen free from pain; constipation.

From this group of symptoms we could not mistake the existence of an inflammation of the summit of the right lung, with inflammation of the corresponding pleura. The pleuritis seemed to have existed alone for two days, and not to be complicated with pneumonia, till towards the end of the third day, at the time of the appearance of the shivering. This pneumonia also appeared to be passing from the first to the second stage. (Bleeding to sixteen ounces; emollient drinks and lavements.) The blood presented a thick coat with raised edges.

On the next day, 24th, the pain had entirely disappeared. The inspiratory movements were less frequent; cough less; sputa had lost their red tint, they were scarcely viscid. Percussion and auscultation gave the same information. However, the countenance of the patient betrayed great depression; pulse frequent and weak; skin not hot. (Two blisters to the legs.)

The 25th, reappearance of great dyspnœa, sputa very much reddened, and very viscid; sound very dull under the right clavicle; mucous râle in this same point. The inflammation had evidently attained a new degree of activity; the very dull sound indicated hepatisation; the mucous râle, resulting from the accumulation of a great quantity of mucus in the bronchi, prevented our discovering the state of the pulmonary parenchyma by auscultation. (Bleeding to eight ounces.) Blood as coated as that of the preceding bleeding.

26th. Breathing more free; sputa less red and less viscid; sound equally dull; continuance of the mucous râle; pulse moderately frequent; sweat. (Emollient drinks.)

27th and 28th. Amendment still greater. Sweats.

29th. Sputa of simple catarrh; sound still a little dull under the right clavicle; nothing is heard in this part but some mucous râle. Pulse scarcely febrile. Patient felt no oppression; however, he could not yet take deep inspirations, and he panted a little whenever he stirred. (Decoction of polygala.)

All the unfavourable symptoms gradually disappeared, and health was re-established about the 10th of January.

We have already pointed out in the course of this case the circumstances which render it particularly remarkable. We have seen that auscultation was of but secondary assistance in indicating the state of the pulmonary parenchyma. To be sure, some crepitous râle was first heard; but after the kind of relapse which occurred on the 25th, the mixture of air and abundant mucus in the bronchi of the upper lobe of the right lung occasioned a râle which masked all the other sounds; this circumstance is far from being rare, and it has often prevented us from availing ourselves of the stethoscope to establish the diagnosis of pneumonia. Before the 25th, the inflammatory engorgement appeared to predominate considerably over the hepatisation; the latter became much more marked from the 25th to the 28th, as was proved by the great dulness of sound. Here, again, the disappearance of the different rational symptoms of pneumonia preceded that of the hepatisation: the latter appeared to exist still in a high degree, when there was no longer either fever, nor characteristic sputa, nor perceptible dyspnœa in a state of rest or in the ordinary inspirations.

The two bleedings, and particularly the second, were employed at a very advanced period of the disease. It is not long since the longer or shorter standing of the pulmonary inflammation chiefly guided practitioners in the employment of bloodletting. Pringle, who is unquestionably a high medical authority, laid it down as a general principle, that in pneumonia we should abstain from bleeding after the 5th day. The observance of this precept must have made many victims; it would perhaps have caused the death of the patient now in question. Stoll was one of the first who proved, that to employ bloodletting in pulmonary inflammations we should have less regard to the period of the disease than to the nature of the symptoms; the state of the respiration should particularly guide us. Severe dyspnœa calls for bloodletting much more imperatively than weakness of the pulse contra-indicates it. How often, in fact, do we not see the pulse, small and weak before the bleeding, rise all at once, when after a large bleeding the respiration has become more free! Oftentimes, also, after a copious loss of blood, we see the skin, which was previously dry, become covered with an abundant and salutary sweat. However, whatever be the advantage of copious and repeated bleedings in pneumonia, it should not be forgotten, that pushed too far and continued too long, the antiphlogistic treatment may be attended with serious consequences. When the inflammation has a tendency to pass to the chronic stage, revulsives to the skin, gentle stimulants given internally, very much assist in its resolution.

Case 8.—A woman, fifty-four years of age, was affected for about six weeks with slight bronchitis. Towards the 15th of January the cough became more frequent and more painful. On the morning of the 18th, acute pain below the right breast, oppression, almost constant dry cough, sensation of burning heat, but preceded by shivering. 19th and 20th, the same state: the patient drank some mulled wine, with sugar and canella. 21st, diminution of pain, a little blood in the sputa. 22nd, oppression still greater; vomited the wine, and refused to take more. On the evening of the 23rd, she entered the La Charité, and was instantly bled; the blood was coated. On the 24th (the sixth day from the appearance of the pain) she presented the following state:—

Inspiratory movements short and very frequent, speech panting, cough not frequent; sputa reddened, combined into a jelly-like transparent mass, which adheres firmly to the vessel; sound dull on the right, anteriorly from the clavicle to the level of the mamma, and posteriorly in the infra and supra-spinous fossæ. The ear applied below the right clavicle hears a crepitous râle, very weak, and without the murmur of pulmonary expansion; posteriorly and under the axilla, bronchial respiration; every where else murmur of the pulmonary expansion very loud, with a mixture of mucous and sibilous râles in several points; pleuritic pain, felt only when percussion is employed, or when intercostal pressure is made, or cough; pulse frequent and weak, skin hot, constantly dry; tongue dry, a little red; abdomen free from pain and soft, slight diarrhœa, face yellow and dejected, decubitus on the back. Notwithstanding the advanced period of the disease, and weakness of the pulse, M. Lerminier ordered a bleeding to twelve ounces. Immediately after the bleeding two blisters were applied to the legs.

Seventh day dyspnœa still greater than the day before (bled to eight ounces; sinapisms in the evening): eighth day, extreme difficulty of breathing; she no longer expectorates; some mucous râle is heard all over the chest, arising from the accumulation of the matter of the sputa in the bronchi; pulse very frequent, and very compressible; skin not hot. (Blisters to the anterior part of the chest; decoction of polygala, kermes.)

Ninth day, tracheal râle; features very much changed; pulse very weak and intermittent; extremities cold; tongue red and dry. Death the following night.

Post mortem. Red hepatisation of the upper lobe of the right lung; its tissue readily torn, and very granular, is precipitated on being put into a vessel of water.

The other parts of the pulmonary parenchyma present a sero-sanguinolent engorgement, which seems to have taken place during the last agony. The bronchi generally red, and filled with liquid. Membraniform albuminous concretions cover the pleuræ pulmonalis and costalis: they had not yet contracted any adhesion. Heart contains black blood partly coagulated. The gastric mucous membrane presents in its great cul de sac a bright injection, with slight softening of its tissue. The end of the small intestines, and the cæcum also injected.

The post mortem here leaves no doubt with respect to the connexion between the state of the lung and the signs furnished by auscultation, percussion, and the sputa. The signs furnished by auscultation were very characteristic the first time we saw the patient; the following days they no longer possessed any value, in consequence of the bronchial râle, which prevented us from distinguishing them.

When this woman entered the La Charité, she was no doubt in a very alarming state; however, she did not appear to be more seriously affected than several of the preceding patients, who perfectly recovered. Blood-letting was employed, the disease being also advanced, the state of the lung seeming to be the same, the weakness of the pulse being also considerable. In them the inflammation retrograded, after the bleeding, pulse became full, the strength was raised. Here, on the contrary, the bleedings were unavailing, as were also the blisters and internal stimulants. Why was not this woman, placed as she was in the same condition, subjected to the same mode of treatment—why, I say, was she not restored to health? That is a question not soluble in the present state of science. Let us here repeat with Hippocrates: *in acutis morbis non omnino tutæ sunt prædictiones, neque mortis, neque sanitatis.*

We here find for the first time an example of suppression of the sputa, a circumstance generally very unfavourable, and almost a uniform index of a fatal termination. The matter accumulated in the bronchi becomes a powerful cause of asphyxia, in persons in whom a greater or less portion of the pulmonary parenchyma is already impermeable to air.

Case 9.—A water-carrier, fifty-eight years of age, entered the La Charité, the 9th of March. For the last three days he was affected with an acute pain below the left breast; breathed with difficulty, and coughed without expectorating.—When we saw him for the first time (the 9th of March), a loud crepitous râle was heard nearly over all the lower lobe of the left lung; in this same part the chest when percussed sounded less than on the right. The patient, tormented by the necessity of coughing, dared not to do so for fear of increasing his pain. The viscid and transparent sputa as yet contained but some streaks of blood; the dyspnœa was not considerable; pulse frequent and full; skin hot and dry; tongue whitish, thirst. (Twenty leeches to the left side; blood-letting to sixteen ounces.) Blood not buffed.

10th (fourth day): dyspnœa increased; sputa more red and very viscid; crepitous râle feeble, without the admixture of any murmur of pulmonary expansion over the entire extent of the lower lobe of the left lung; crepitous râle, not intense, mixed at intervals with the natural respiratory murmur in the upper lobe of this same side; sound decidedly dull from the inferior angle of the left scapula to the base of the thorax. Thus the inflammation passed to the second degree in the inferior lobe, and the upper lobe began to present the first degree in some parts. The patient had still considerable strength. M. Lerminier prescribed two bleedings; one immediately, amounting to twenty ounces, and the other in the evening, to twelve ounces. Both presented a thick buffy coat.

On the fifth day the same state. Sixth day, extreme dyspnœa; sputa very viscid, and of a bright red; bronchial respiration, and peculiar resonance of the voice (bronchophony) on the level of the lower angle of the left scapula; sound very dull at this same point. On the anterior part of this side, from the clavicle to the breast, laterally in the hollow of the axilla, and immediately behind, above and below the spine of the scapula, crepitous râle very loud, with trifling mixture of the natural respiratory murmur. The pulse still retains considerable strength, the skin remains dry. This inflammation was still at its highest degree of acuteness, and though the bleedings employed up to that period seemed productive of but little benefit, it was only by drawing blood, however, that we could hope to arrest its progress. (Bleeding to sixteen ounces.) Blood very much buffed.

Seventh day, the ear applied to the points where the bronchial respiration existed the day before, could no longer hear anything, which seemed to us to indicate that the hepatisation had increased. Other symptoms as before. (Bleeding to eight ounces ; two blisters to the legs.) In the evening, and during the night, the patient was delirious.

Eighth day, return of the pleuritic pain ; sputa very copious, of a dirty grey colour ; features altered ; pulse very frequent and easily compressed ; skin free from heat ; diarrhœa. (Blisters to the left side ; decoction of polygala ; kermes.) In the evening, and during the night, return of the delirium.

Ninth day, suffocation imminent ; suppression of the sputa ; mucous râle on the two sides of the chest. (Two sinapisms to the knees.)

On the tenth day, he died a few hours after the visit.

Post mortem. Red hepatisation of the lower lobe of the left lung, sanguineous engorgement of the upper lobe ; membraniform albuminous concretions in the pleuræ costalis and pulmonalis of this side ; effusion of a glass full of reddish serum into the pleura. Right cavities of the heart distended with clots of blood ; submucous injection of the intestinal canal. Redness of the mucous membrane itself at the end of the small intestine, and in the cæcum.

The increasing alteration of the pulmonary parenchyma may be accurately traced in this patient from day to day. At first the inflammation existed only in the lower lobe. At first a weak crepitous râle was heard in this lobe without the respiratory murmur ; at this same period the sound was dull and the sputa very viscid. The existence of commencing hepatisation was not therefore doubtful. Subsequently, and still in this same part, the bronchial respiration manifested itself, and later still no sort of sound was any longer perceived there ; then it might be affirmed that the hepatisation was complete and very extensive. In the upper lobe the engorgement, which was constantly increasing, but did not arrive at hepatisation, was announced by the crepitous râle. This râle never ceased to be heard ; it became every day more marked in the direct ratio of the diminution of the murmur of the pulmonary expansion. At last a period came when the accumulation of a great quantity of liquid in the bronchi gave rise to a very loud mucous râle, which no longer allowed us to recognise by auscultation the state of the pulmonary parenchyma.

We may remark in this patient, as in tne preceding, the constant dryness of the skin, a circumstance always unfavourable in pulmonic inflammation. We may also observe the number and copiousness of the bleedings, which were at first employed alone, and subsequently in combination with revulsives. Ultimately a period arrived when the latter alone were admissible.

Case 10.—A man, thirty-four years of age, of a strong constitution, had been labouring under a cold for some time, when, on the 15th of January, he was seized with a great shivering, followed by a burning heat without sweat. At the same time there was an increase of the cough and dyspnœa. From the next day the sputa became tinged with blood. On the 17th, he was blooded ; the 18th, he entered the La Charité, and presented the following state :—Breathing short, hurried, but appearing to the patient very little interfered with ; crepitous râle externally to, and on the level of, the right breast, extending also posteriorly to the lower part of the supra-spinous fossa; no perceptible diminution in the sonorousness of the thoracic parietes; cough frequent; sputa of a yellow colour, moderately viscid; pulse frequent and full; skin hot and dry. This group of symptoms announced an inflammation of little extent, and which was as yet but in the first stage. (Bleeding to sixteen ounces.)

19th. Same state. (Bleeding to eight ounces.) From the 19th to the 22nd the inflammation appeared to progress by little and little towards a resolution. Every night copious sweats took place; they were very heavy on the night of the 21st, and morning of the 22nd (from seventh to eighth day). No active treatment had been up to this period put in practice. The eighth day the breathing was free; expectoration catarrhal; pulse free from frequency; but a little crepitous râle was still heard on the level of the inferior angle of the scapula. Thus there still existed some engorgement which required for some time care and strict regimen. On the 23rd, this râle continued. On the 24th, the patient, who thought himself completely cured, went into the walks of the hospital, and was exposed to cold. The 25th, return of the dyspnœa and reddened sputa; very loud crepitous râle over all the lower lobe of the right lung; intense fever. (Bleeding to twenty ounces.) In the day the difficulty of breathing increased. Sputa expectorated with some difficulty.

On the 26th, face livid, like that of an asphyxiated person; crepitous râle very feeble, without any other murmur, and dull sound over the lower lobe; breathing panting; pulse very frequent. (Two bleedings in the course of the day, twelve ounces each.) 27th. Died in the afternoon.

Post mortem. Red hepatisation of the lower lobe of the right lung; no trace of pleuritis; heart full of black coagulated blood; liver and intestines engorged with blood.

We see here a striking example of the danger of deviating from strict regimen before the complete resolution of a pneumonia. This inflammation was at first very mild; it had not passed the first stage. After lasting eight days, all the rational symptoms had disappeared; there only remained a little engorgement, which, it seemed, should soon disappear. It was then an imprudence was committed; the patient exposed himself to the action of cold. The pulmonary inflammation soon reassumed a new degree of intensity; in some hours it passed from the first to the second stage. In the space of two days the hepatisation took possession of the entire lower lobe of the right lung, and the patient died in a real state of asphyxia.

Case 11.—A sempstress, forty-seven years of age, of rather a delicate frame, entered the La Charité, the 2nd of June, 1822. For the last five or six days she experienced all the symptoms of a pleuro-pneumonia; pain external to, and on a level with the right breast; cough dry at first, then accompanied with bloody sputa; great oppression; fever. On the third day, twenty leeches were applied to the affected side. Having entered the hospital, on the fifth or sixth day she presented the signs of the two first stages of pneumonia; dull sound, and weak crepitous râle, without the murmur of pulmonary expansion, over almost the entire extent of the lower and middle lobes of the right lung; well-marked crepitous râle below the clavicle, and in the supra-spinous fossa of this side, with the murmur of the pulmonary expansion; sputa yellow, transparent, and so viscid, that when the vessel is inverted and shaken with violence, they cannot be detached; breathing short and hurried, not appearing, however, to the patient much affected; almost total disappearance of the pleuritic pain; pulse frequent and weak; skin hot and dry; slight diarrhœa, without any other sign of intestinal inflammation. (She was bled to sixteen ounces.) Blood was covered with a thick coat, surmounting a large clot, with but little serum.

June 3. Sound a little dull under the right clavicle; in this same part a weak crepitous râle, without any murmur of the pulmonary expansion; increased dyspnœa. (Bled to twelve ounces; and in the evening two blisters to the legs.)

June 4. Duller sound, and bronchial respiration under the right clavicle; in other parts of this side sound very dull; there is neither râle nor respiration heard. Pulse very frequent and small, without much heat of skin.

On the 5th, suppression of the sputa; mucous râle in all the right side; extreme dyspnœa. (Blister to the chest.) In the course of the day, delirium; cold sweats; dyspnœa still greater. Death in the night (towards the ninth or tenth day).

Post mortem. Red hepatisation of the three lobes of the right lung; some thin albuminous concretions extending, in the form of filaments, from the pleura costalis to the pleura pulmonalis of the right side; right cavities of the heart very much distended with black coagulated blood; cerebral substance traversed with a great number of red points; red patches through the mucous membrane of the large intestine.

This is the first instance we meet of hepatisation of the entire of a lung. When the patient entered the La Charité, the signs furnished by auscultation and percussion announced the existence of this hepatisation, not yet complete, in the middle and lower lobes; the upper lobe was as yet but engorged; the following days it became rapidly hepatised; but in this lobe the hepatisation was announced by the *bronchial respiration*, whilst in the other lobes, whose alteration however seemed to be the same, this characteristic sound was not heard. We think it right carefully to note these differences of signs afforded by identical lesions, in order that we may be accustomed to recognise these lesions, whatever may be the shades announcing them. Shall we refer to the great viscidity of the sputa, as connected with the degree of inflammation? To the dyspnœa, which, very considerable from the period of the patient's entering the hospital, and having then made constant progress, announced a fatal termination?

Case 12.—A man, thirty-three years of age, entered the La Charité, December 18, 1822. He was of a full, plethoric habit, and for some time back experienced frequent headachs, transient dizziness, and some attacks of epistaxis. On the 16th, when getting up, he felt a general illness; in the day, violent headach, tinnitus aurium, sensation of burning heat over the entire body. (Pediluvium.) 17th kept his bed. On the 18th he presented the following state: face red; eyes injected; pulsations of the temporal arteries felt by the patient; frontal headach; general debility; a sort of numbness of the intellectual faculties; pulse frequent and full; skin hot; tongue whitish, with slight redness of the edges; thirst; anorexia; abdomen soft and free from pain; constipation; urine scanty and red; slight cough. After examining this patient attentively, we could not refer the symptoms to the sufferance of any organ in particular; all the organs seemed to be simultaneously the seat of a strong excitement, without there being in any part real inflammation. This appeared to be, in some way, a higher degree of the plethoric state; to give a name to this aggregate of symptoms we called it inflammatory fever. He was bled to twenty ounces.

The blood presented a large clot, of remarkable density, without the buffy coat. After the bleeding the headach diminished, whilst the other symptoms continued.

19th and 20th, cough increased, it came on in frequent fits, and resembled somewhat the cough which precedes measles (emollient ptisans, pediluvium).

On the night of the 20th, the patient awoke in consequence of an acute pain which, felt particularly between the right breast and sternum, radiated from thence as far as the hollow of the axilla. This pain became insupportable when he took a deep inspiration or made the slightest movement. On the morning of the 21st it was also intense; the patient, though anxious to cough, dared not to attempt it; he did not expectorate; the breathing was short and hurried; percussion not easily practised on him; the respiratory murmur was heard in every part distinctly. The fever was intense. (Thirty leeches to the right side of the chest.) 22nd, diminution of the pain; slight crepitous râle below the inferior angle of the scapula of the right side. Dyspnœa increased, pulse frequent and full. (Bleeding to twelve ounces.)

23rd. Sputa reddened, transparent, viscid, breathing more and more embarrassed; crepitous râle on the right, over the entire extent of the lower lobe, and on the left below the clavicle, as well as immediately above and below the spine of the scapula. Sonorousness under the left clavicle, somewhat less than under the right. The blood drawn the day before presented a large clot covered with a thick coat. M. Lerminier prescribed a new bleeding to sixteen ounces. The blood was coated as that of the preceding bleeding.

24th and 25th. The crepitous râle becomes more and more marked in the parts already mentioned, and in these parts the murmur of the pulmonary expansion is diminished in proportion; the *dulness* of the sound is equally increased. The sputa have acquired very great viscidity, the respiration is more and more hurried. The patient, lying on his back, cannot move or place himself on either side without dreading suffocation. The pulse, always very frequent, is more compressible; skin hot and dry. 24th, two bleedings to twelve ounces each; both were coated. 25th, a bleeding to six ounces, two blisters to the legs.

26th. On the right and left the crepitous râle has disappeared, which is succeeded, under the left clavicle, by the bronchial respiration, with loud resonance of the voice, and inferiorly on the right a mucous râle, so considerable as to resemble the gurgling of tuberculous cavities. On both sides the sound very dull. Extreme oppression; the sputa not abundant, and expectorated with difficulty, have the appearance of a thick, opaque, dirty reddish grey pea-soup, and adhere strongly to the vessel. Pulse frequent and weak; skin hot and dry. Yellow tint of the face. (Two blisters to the thighs, kermes.)

27th. Mucous râle on both sides. 28th. Total suppression of the sputa; extreme dyspnœa; features sharpened and very much changed; extremities cold. Died the following night.

Post mortem. Red hepatisation of the lower lobe of the right lung and upper lobe of the left lung. Albuminous concretions of recent formation on the pleuræ costalis and pulmonalis of the right side. Right cavities of the heart distended with black coagulated blood. Venous injection of the gastro-intestinal mucous membrane; liver and spleen gorged with blood.

We have here an instance of double pneumonia in the second stage, with pleuritis confined to the right. The commencement of this disease deserves notice. At first there was but a general affection, a sort of increase of the plethoric state, an inflammatory fever. In this state no organ was really inflamed; but all seemed to be on the verge of it, as if they were all disposed to it by too rich and too stimulating a blood. The bleeding employed at this period had no influence, and soon after, the disease being localised, became a very serious pleuro-pneumonia, the fatal progress of which could not be arrested by a very active antiphlogistic treatment. This case proves what we have already established elsewhere *, namely, that all diseases are not primarily local, that a febrile disturbance may exist independent of a local affection; that inflammations themselves may be preceded by a general inflammatory state, of which the supervening inflammation is but in some degree the localisation.

---

* See the other volumes of this work, and our work on Pathological Anatomy.

The blood drawn before the appearance of the symptoms of pleuro-pneumonia was not buffed. It became so as soon as the pulmonary inflammation was established.

The sputa, before their complete suppression, changed their appearance. They became opaque, a dirty reddish grey colour, and stuck to the bottom of the vessel. We should always draw an unfavourable omen from the appearance of such sputa, which very much resemble the greyish sputa oftentimes formed in tuberculous cavities.

The skin remained constantly dry, and this circumstance again added to the unfavourable nature of the prognosis. With respect to the signs afforded by auscultation and percussion, they indicated with great precision the nature, seat, and extent of the pulmonary alteration.

ARTICLE III.

PLEURO-PNEUMONIA IN THE THIRD STAGE (GREY HEPATISATION, OR SUPPURATION OF THE LUNG).

Case 13.—A shoemaker, sixty-seven years of age, entered the hospital the 6th of May, 1821. During the last fifteen days of April he had been affected with a cold. On the 1st of May he felt a slight pain towards the hollow of the right axilla; at the same time shivering, cough more frequent and more painful. On the 2nd of May the pain no longer existed, but the breathing became embarrassed. On the 3rd there was blood in the sputa. From the 3rd to the 6th of May the dyspnœa increased. The patient drank every day several cups-full of broth, with a portion of wine; no other medical treatment was employed but the application of a blister to the chest. On the 6th he presented the following state: face yellow and altered considerably; breathing short and hurried; speech panting; sound very dull in the space included between the right clavicle and the breast, as well as in the hollow of the axilla of the same side. In this same space neither the respiration nor any râle is heard; lower down there is a râle which resembles the mucous much more than the crepitous râle; elsewhere the respiration is distinct and very loud; sputa like a thick solution of gum-arabic coloured a brownish red. From these sputa M. Lerminier announced the existence of pneumonia in the third stage, with purulent infiltration of the parenchyma. The pulse was frequent and weak, skin hot and dry. (Two blisters to the thighs, decoction of polygala.) Died the next morning.

Post mortem. The upper and middle lobes of the right lung were dense, compact, and did not float in water. When cut into, they presented a mixture of red and greyish patches, unequally distributed through the substance of these lobes; where the former were found, the pulmonary tissue was in a state of red hepatisation; where the latter were found the parenchyma of the lung was reduced by slight pressure to a dirty greyish pulp, whence a liquid of the same nature flowed in considerable quantity. This liquid appeared to issue from a multitude of small, or as one may say, capillary bronchi. The lower lobe was but moderately crepitous; it still floated in water; from its tissue, which was a little more easily torn than in the natural state, there flowed a considerable quantity of bloody serum. The left lung was sound, a little engorged posteriorly.

This case, which is incomplete in many respects, by reason of the advanced period at which we saw the patient, is, however, not uninteresting. It shows us, combined in one and the same lung, the three degrees of inflammation from simple engorgement to purulent infiltration. In less than six days the pulmonary inflammation, which had been badly treated, terminated in suppuration.

The nature of the sputa should engage our attention. With a very few exceptions, to be noticed in the resumé, these sputa characterise the third degree of pneumonia with as much certainty as the red and viscid sputa, of which we have hitherto spoken, characterise the first and second stage.

The inflammatory engorgement of the base of the lung was not really announced by any sign; the sonorousness of the corresponding thoracic parietes was not diminished; and with respect to the râle heard in this part, it was not at all characteristic, it might depend solely on the mixture of the air and sputa in the bronchi.

Case 14.—A man, thirty-nine years of age, felt, on the 9th of April, 1821, a violent shivering followed by intense heat; at the same time a stitch in the right side, below the breast; cough frequent and moist. These symptoms continued the two following days. He was bled in the evening of the third day. On the morning of the fourth day, the time the patient entered the La Charité, he presented the following state:—

Countenance pale; strength tolerably well retained; intellectual and sensorial functions intact; inspirations short and frequent; sound dull on the anterior and right part of the chest, between the clavicle and breast; absence of all kind of respiratory murmur and râle in this same part; mucous râle very loud in nearly all the lower lobe of this same lung. The patient asserts that he does not feel his respiration embarrassed; however, he is unable to make a deep inspiration; sputa transparent, and very much reddened, combined into a gelatiniform mass, which cannot be detached from the vessel; pulse full and frequent; tongue white and moist; no stool. (Bleeding to twelve ounces, emollient drinks.)

Fifth day: state of the patient nearly the same, but the expectoration has changed its character: it consists of a brownish liquid, which escapes in one sheet (*en nappe*) when the vessel is inclined. (Third bleeding.)

Sixth day: features very much altered; eye dull; delirium during the night. The patient felt himself very weak: answers accurate, but slow. Sputa of the same kind as on the preceding day, but less abundant. (Blister to the part affected.) Death during the night.

Post mortem. The upper and middle lobes of the right lung were in a state of grey hepatisation: from their tissue, which was soft and easily torn, there flowed a great quantity of greyish purulent liquid. The lower lobe presented a mixture of red hepatisation and engorgement; the left lung was healthy; the inner surface of the bronchi of the two lungs presented equal redness.

When the patient entered the La Charité, at the beginning of the fourth day, there was already red hepatisation of the upper portion of the right lung, as was proved by the signs afforded by auscultation, percussion, and the sputa; the bronchial respiration was not heard in this case. From the fifth day the new appearance presented by the sputa indicated the existence of the grey hepatisation. With respect to the mixture of the red hepatisation, and of simple engorgement observable in several parts of the lower lobe of the right lung, it did not perceptibly diminish the sonorousness of the corresponding thoracic parietes, and it could not be recognised by auscultation, by reason of the mucous râle caused by the accumulation of much mucus in the bronchi of this lobe.

Let us recur to the characters of the respiration. Notwithstanding the extensive and serious alteration of the lung, the dyspnœa was never but inconsiderable; scarcely felt by the patient, it really was perceptible only to the physician. From this it might be concluded, that this person did not die of the increasing difficulty of the respiration, as most frequently happens; but that in him the venous blood receiving only in one single lung the modifications which constitute arterial blood, became unable to convey the necessary vital excitement to all the organs, together with the materials of nutrition.

Case 15.—A man, sixty years of age, a delft manufacturer, was employed in his usual occupation on the 23rd of February. He went to bed in the evening in very good health, and awoke in the middle of the night with a violent shivering; he then felt a burning heat, and was seized at the same time with an acute pain occupying the inferior lateral part of the thorax, in the extent of the six last ribs; it increased by pressure, by coughing, and by taking a deep inspiration. On the 24th this pain continued; the patient coughed very much, without expectorating; he became drowsy. On the 25th he began to expectorate a little transparent mucus, scarcely reddened; he entered the La Charité in the evening, and was bled. At the visit of the 26th (third day), he presented the following state:—

No alteration of the features, movements perfectly free, strength still retained. The patient assures us that he feels not the slightest oppression; however, the breathing was evidently hurried; inspirations short and frequent; speech a little panting. The chest, when percussed, yielded a dull sound on the right, posteriorly, over the entire space usually occupied by the middle and inferior lobes of the lung of this side; in this same part a well-marked crepitous râle is heard; every where else the murmur of the respiration is loud and clear, and the sonorousness perfect. Frequent cough, accompanied by the expulsion of viscid, transparent sputa, which combine into a gelatiniform mass, which as yet adheres but slightly to the vessel, and is scarcely reddened. The pain of side much less since the bleeding; fever slight. Tongue moist, and vermilion-coloured; thirst; anorexia; two or three liquid stools every day since the 23d. (He was bled to sixteen ounces forthwith: a second bleeding of twelve ounces three hours after.) The blood of both bleedings was buffed; that of the bleeding of the day before was not so. He bore this double bleeding very well. In the afternoon the pulse was remarkably irregular: during the night the patient slept very well; he did not perspire.

On the morning of the 27th (fourth day), the state of the respiration was nearly the same as the day before. Auscultation and percussion gave the same information; the sputa, which were not viscid, were no longer tinged with blood; pains nearly gone, pulse frequent and compressible; skin, which was nearly of the natural heat, retained its dryness. Slight diarrhœa. (Bleeding to eight ounces.)

Fifth day; the patient appeared weaker than on the preceding days; however, he still sat up with ease. The inspiratory movements short and frequent, were performed at once by a strong elevation of the ribs, and by depression of the diaphragm; a weak crepitous râle, without any mixture of the murmur of the pulmonary expansion, was heard on the right on the level of the middle lobe of the lung; lower down, the ear, when applied to the chest, perceived the rising of the ribs; but there was neither râle, nor any respiratory murmur heard; there also, the chest, when percussed, yielded a sound much duller than on the preceding days. On the left, as well before as behind, and on the right anteriorly, the inspiratory murmur was clear and remarkably intense; the sputa were, as on the preceding day, very little viscid and scarcely reddened; the pleuritic pain was entirely gone; pulse small and irregular. (Two blisters to the legs: four grains of kermes.)

Sixth day, features very much altered; eyes dull; lips of a purple colour. The breathing was no longer performed except by small inspiratory and expiratory movements, which were very frequent. The sputa underwent a remarkable change; they were united into one liquid mass, similar to a thick solution of gum, in which there might be dissolved a colouring matter of a yellowish red, bordering a little on brown in some points. This expectoration we considered an unfavourable phenomenon. Auscultation detected the existence of bronchial respiration over almost all the upper and middle lobes of the right lung. This murmur was obviously distinct from the very loud murmur of the pulmonary expansion heard in the remainder of the lungs. The sound was always very dull on the right. The patient, when sitting in the bed, still executed some movements with ease and readiness. The pulse, which was very small, was much more frequent than on the preceding days; the skin remained dry; tongue whitish; slight diarrhœa. From the nature of the sputa, M. Lerminier announced the existence of the third stage of pneumonia. The very great dyspnœa still rendered the prognosis more unfavourable.

(Decoction of polygala; mixture with four grains of kermes.)

Two hours after we returned to see the patient; everything was now worse; he was in a state of asphyxia; face puffed and violet-coloured; extremities cold; intelligence intact; pulse so frequent that it could not be counted. On then auscultating the chest, we only heard in all its points a very loud gurgling in consequence of the accumulation of mucus in the bronchi. This bronchial râle soon became tracheal, and the patient died in the course of the day.

Post mortem. The lower lobe of the right lung, presenting a tissue soft and easily torn, was reduced by slight pressure into a greyish pulp, whence a purulent liquid of the same colour flowed. In the middle lobe there was found a mixture of this purulent infiltration, or grey hepatisation with the red hepatisation, and in a small number of points only engorgement in the first stage The upper lobe was sound, as well as the left lung, which posteriorly presented cadaveric engorgement. False membranes were interposed between the middle and lower lobes of the right lung. The right cavities of the heart were gorged with black blood.

The stomach presented a bright redness on its inner surface, towards its great cul de sac, to the extent of about three or four fingers' breath in every direction. There the mucous membrane itself was red, and more easily torn than elsewhere. The termination of the small intestine and the cæcum were injected. The liver was gorged with blood.

This pneumonia presented no serious character up to the fourth day. Up to that period, the aggregate of the symptoms announced merely an inflammation in the first stage, with some points, perhaps, of red hepatisation. Copious bleedings had been employed; the sputa were already tending to return to the catarrhal state, and everything seemed to announce a favourable termination. From the fourth to the fifth day, the appearance of everything changed; the dyspnœa, which was then slight, became all at once very considerable, and auscultation taught us that there was very extensive hepatisation of the right lung; the dull sound also was sensibly increased. With respect to the sputa, they presented a remarkable anomaly; notwithstanding the rapid increase of the pulmonary inflammation, they had not become either more red or more viscid. In this state of things, would more bleedings have been of use? would they have arrested the progress of the inflammation, and prevented the disorganisation of the lung? when employed with a sort of profusion, at a less advanced period, they exercised but a very doubtful influence on the inflammation, which was then slight. What could be hoped from them now? Be it as it may, they were not employed; and, guided by the paleness of the face, the diminution of the heat of skin, and the smallness of the pulse, blisters were applied to the lower extremities; kermes was prescribed; but this new mode of treatment was ineffectual. The next day, the 6th, the grey hepatisation was announced by the appearance of the sputa. Thus, in the space of forty-eight hours, the pneumonia passed from the first to the second and third stage. In forty hours the pulmonary tissue passed from the state of simple engorgement to that of suppuration.

The signs furnished by auscultation were not the same the fifth and sixth day. At first the incomplete hepatisation of the middle lobe was announced by a weak crepitous râle, without mixture of the murmur of pulmonary expansion; the complete hepatisation of the lower lobe was announced by the absence of every species of respiratory murmur or râle. The sixth day, the *bronchial respiration* was heard. We have already stated that these varieties in the signs furnished by auscultation, depend either on the different degrees of hepatisation, or on the relation and connexion between the bronchi and the portions hepatised.

We shall note as an unfavourable circumstance, and one connected with the fatal termination, that during the entire course of the disease the skin remained constantly dry.

Need we remark the great irregularities of the pulse? Independently of the organic state of the heart, they were connected with a peculiar disposition of the individual, and should be considered but of secondary importance in the establishment of the prognosis.

Case 16.—A man, forty-nine years of age, had a cough for some days without presenting any other serious symptom, when he entered the La Charité during the April of 1824. The first day he appeared to labour merely under severe pulmonary catarrh. There was hardly any febrile disturbance. The breathing was free; the chest, when percussed, resounded well everywhere; auscultation detected nothing but the mixture of the mucous and sibilous râles in several bronchial branches, and great intensity of the inspiratory murmur. However, the sputa had an appearance which did not seem to accord with the apparent mildness of the other symptoms. They consisted of a liquid similar to a thick solution of gum coloured with a brownish red, such as are seen in the third stage of pneumonia. The next day, 7th of April, the expectoration continued; but there was now a greater acceleration of the pulse, more intense heat of skin, and considerable embarrassment of respiration. Percussion then detected a dull sound on the level of the right breast; we there heard a weak crepitous râle without mixture of the murmur of pulmonary expansion. The existence of pneumonia was no longer doubtful. (Bleeding to twelve ounces.) Blood not buffed.

8th of April, dyspnœa increased, sputa still retaining their brownish red appearance; sound dull from the right breast to the clavicle of this side, and over this same extent, bronchial respiration with resonance of the voice. Pulse weak; skin free from heat; face yellow and dejected. (Two blisters to the legs.)

9th. Delirium; tracheal râle; pulse weak and not frequent; extremities cold. (Sinapisms, polygala, kermes.) He died some hours after the visit.

Post mortem. The superior lobe of the right lung presented the red and grey hepatisation; the latter predominated towards the rest of the lung; the contrary took place according as we approached the summit.

This case presents a very remarkable circumstance—namely, the existence of the sputa of the third stage of pneumonia, at a period when no other sign could cause us to expect not only suppuration of the lung, nay, not even its simple inflammatory engorgement. It is very probable that then the grey hepatisation already existed in a circumscribed portion of the right lung towards its root; its little extent accounts for the absence of dyspnœa, and its seat explains the insufficiency of percussion and auscultation. From thenceforward, however, the murmur of pulmonary expansion was so intense, that one might suppose that an obstacle to the free ingress of the air existed in some portion of the pulmonary parenchyma. The following days the inflammation made rapid progress; it extended to all the upper lobe; from this moment there was no longer any obscurity in the diagnosis, and the autopsy proved the existence of this grey hepatisation, which the character of the sputa alone (abstracting from every other sign) had inclined us at first to suspect.

CHAPTER II.

PLEURO-PNEUMONIA, WITH THE ABSENCE OF ONE OR MORE OF ITS CHARACTERISTIC SIGNS.

ARTICLE I.

ABSENCE OF SIGNS FURNISHED BY AUSCULTATION AND PERCUSSION.

Case 17.—A man, twenty-seven years of age, of a weak constitution and subject to catch cold, was very much fatigued, and perspired on a journey he made on the 20th of October 1821. On the night of the 20th he slept well. On getting up out of bed he felt himself ill; and soon after felt a shivering, then a burning heat; he went to bed. At two o'clock, he was seized with a dry and frequent cough. In the night an acute pain of the side came on between the 10th and 11th ribs of the left side. He did not sleep, and coughed very much without expectorating. The 22nd (2nd day) he began in the morning to spit a little blood. The breathing was not embarrassed; he lay on the right side, in order to avoid the acute pain which lying on the opposite side occasioned. He entered the La Charité in the evening, and was bled. On the morning of the 23rd, he presented the following state:—

Countenance dejected; headach; sensation of debility; decubitus on the back; frequent cough; sputa very much reddened, transparent, and combined into a jelly-like mass, which flows from the vessel when it is inclined. Acute pain on the level of the ninth, tenth, and eleventh ribs, increased by coughing, inspiration and percussion. The chest when percussed resounds equally well in every part. When auscultation is employed, the murmur of respiration is heard in every part clear and loud. Breathing hurried and short, though the patient assures us he feels no oppression. Pulse not frequent; skin hot and dry. Tongue yellowish; anorexia; abdomen free from pain and soft; no stool for the last two days.

The sputa were too characteristic to allow of any doubt regarding the existence of pneumonia; it was not, however, announced either by percussion or by auscultation. We concluded from this that the inflammation was but partial, and that it probably occupied the base, centre, or root of the lung. (Bleeding to twelve ounces; emollient drinks.) Blood buffed.

On the fourth day the patient found himself better; he had coughed little; the sputa, which were not viscid, contained less blood; respiration less frequent; pain no longer felt, except in making deep inspirations.

On the fifth day the patient, having exposed himself to cold when going to stool, was not so well as on the preceding day. The sputa were again red and more viscid, breathing very much embarrassed, extreme frequency of the pulse. The sound of the thoracic parietes continued clear, and the respiration distinct in every part. This return of the symptoms, and particularly the great dyspnœa, induced M. Lerminier to have recourse to a third bleeding of eight ounces, and to order in the evening two blisters to be applied to the legs.

Immediately after the bleeding, which was buffed as the preceding, the patient felt himself considerably relieved. In the afternoon a copious sweat appeared for the first time. He passed a good night.

On the sixth day there was a perceptible amendment. Profuse sweats had taken place during the day, and on the next day, the seventh, there remained no sign of pneumonia. The pulse was scarcely frequent; the respiratory murmur had lost that intensity, which approximates the respiration of the adult to that of the infant, and which indicates a greater or less difficulty to the free entrance of the air into the entire extent of the pulmonary parenchyma. The following days convalescence.

This case presents to us the absence of the signs ordinarily furnished by auscultation and percussion, and without which it is impossible to determine the seat and extent of the pneumonia. The expectoration alone announced with certainty the nature of the affection, which, without the sign, might have been taken for a simple pleuritis.

Let us remark also the mischievous influence made by the impression of cold, the appearance of the sweats coinciding with the general improvement, but not being here the cause of it in so striking a manner as in several of the preceding cases; and lastly, the termination of the disease on the seventh day.

CASE 18.—A servant, thirty eight years of age, habitually enjoying good health, having had, fifteen years before, *a fluxion of the chest*, was in very good health when he arose from bed 15th August, 1822. At eight o'clock, being engaged in his usual occupations, he felt a pain in all the anterior and right side of the chest, which he compared to that which would be caused by the pricking of a number of pins. About twenty minutes after the pain of the side began to be felt, a violent shivering came on: it lasted up to two o'clock in the afternoon, that is, about five hours and a half, and was succeeded by a burning heat; no sweat took place. In the course of the day the patient frequently felt a desire to cough; but he did not venture to do so, on account of the cough increasing the pain. That same evening he entered the La Charité, and was immediately bled. In the night he slept a little.

State on the sixteenth, the second day: face red, eyes injected, slight headach, decubitus on the back or on the left side, continuance of the pain on the right side, increased by inspiration, by coughing, by moving, by lying on the affected side, but not exasperated by pressure nor even by percussion; cough frequent, dry; little dyspnœa; chest sonorous every where; murmur of the pulmonary expansion clear in every part, but louder on the left than on the right, a circumstance which appeared solely to depend on the less dilatation of the thorax on the right, by reason of the pain; resonance of the voice equal in all points. Pulse hard, more than 100; skin hot and dry. Tongue a little red; thirst, bitter taste in the mouth, constipation. Blood drawn the preceding day was covered with a thin greenish coat. (Emollient drinks and lavements.)

In the morning of the third day, expectoration of viscid, transparent, highly reddened sputa; in other repects, the same state as on the day before. (Bleeding to twelve ounces.) The blood presented no coat.

On the fourth day the respiration rather calm, pain no longer felt except on making deep inspiration, and considerable exertion; sputa less red and not very viscid; arterial pulsations no longer 100; no râle heard in any part. In the ordinary inspirations, the entrance of the air into the pulmonary vesicles was heard with more intensity on the left than on the right; but when the patient inspired more forcibly, the respiratory murmur became equally strong and loud on both sides.

In the evening the skin was covered for the first time with a profuse sweat. On the next day, the 5th, the pulse was scarcely frequent, the pain had entirely disappeared, respiration returned to its natural state; the expectoration was purely catarrhal. The sweat continued all the day. On the morning of the sixth day the skin was still moist, the pulse still a little frequent: the sweat ceased in the course of the day. The seventh and eighth days, the pulse retained a little of its frequency; it lost it entirely on the ninth. The patient then appeared entirely re-established in health, and soon left the hospital.

In this patient nothing was observed at first but simple pleuritis. The pain was remarkable for its extent; it preceded the shivering, which is not most usually the case. A first bleeding employed nine or ten hours after its appearance did not remove it. At the commencement of the third day some sputa of pneumonia appeared; they were the only sign which announced the extension of the inflammation to the pulmonary parenchyma. Here, again, auscultation and percussion were insufficient; or rather, this double method afforded, in some measure, but negative signs; the continuance of the clearness of sound, and of the loudness of the respiratory murmur proved that the pneumonia was deep-seated and not extensive; the less intensity of the respiratory murmur on the right than on the left was but the result, in a mechanical sort of way, of the diminished dilatation of the right side, in consequence of the pain. The next bleeding employed, on the third day, was followed by a marked amendment: towards the end of the fourth day a profuse sweat appeared, and continued on the next day; at the same time the pain completely disappeared, the expectoration became catarrhal, and all dyspnœa ceased; but up to the eighth day the pulse continued a little frequent, and it was not till after this period that the complete return of the arterial pulsations to their natural rhythm appeared to announce the total resolution of the inflammation.

Case 19.—A man, forty-one years of age, of delicate constitution, said he had for the last eleven years repeated *fluxions of the chest,* all of them indicated by pain in the side, by cough, by oppression and spitting of blood.

On the night of the 24th of April, 1822, he felt some shivering, and at the same time wandering pains in the two sides of the chest; he coughed very much. On the 25th the pain and cough continued. He entered the La Charité on the evening of the 26th. Then the viscid, transparent, reddened sputa announced the existence of a pneumonia; the breathing, which was short, appeared to the patient a little embarrassed; the pain of the two sides had not diminished; decubitus on the back. The chest when percussed resounded well in every part; the respiration, when examined with the stethoscope, was heard every where very loud, but clear. Pulse frequent and strong; skin moist. He was bled to twelve ounces.

On the morning of the 27th, third day, pain felt only on the right, to the extent of four or five fingers' breadth below the breast. In other respects no other change had taken place. (Bleeding to eight ounces, ten leeches to the right side, emollient drinks.)

Fourth day, the patient no longer felt any thing but a very slight pain in deep inspirations. The breathing was but very slightly hurried. The reddened sputa and the fever continued; no sweat took place. Auscultation and percussion gave the same information. (Fifteen leeches to the anus.)

On the fifth day, respiration natural, little cough, catarrhal expectoration, pulse scarcely frequent. There was no apparent crisis; particularly the skin retained its dry state.

Sixth day, reappearance of the pain in the right side. Sputa again reddened and viscid; fever; however, the sonorousness of the chest and clearness of the respiratory murmur still continued. (Fifteen leeches to the right side.) The debility and emaciated state of the patient seemed to contra-indicate general bleeding.

Seventh day, all the symptoms of return of the disease have now disappeared; on the following days, convalescence. Still the patient continued to cough; he was in a complete state of emaciation, which, up to the 12th of May, the time he left the hospital, seemed rather to increase than diminish. The chest, examined both by auscultation and percussion, presented no trace of any lesion of either lungs or pleuræ.

The great number of pneumonias with which this patient was affected in the space of a few years deserves remark. He was really predisposed to them; all the irritating causes which acted on him directed their influence towards the lung, and excited inflammation in it. But it might be supposed, in consequence of the constitution of the individual, that the cause of this predisposition resided in pulmonary tubercles. On the other hand, inflammations so frequently repeated must on their part accelerate the softening of tubercles and increase their number. When the patient left the hospital, he appeared to us, in fact, to be on the verge of pulmonary phthisis.

The nature of the expectoration left no doubt as to the existence of pneumonia. But what part of the lung was the seat of it? Here, again, as in the preceding cases, auscultation and percussion told us nothing in this respect. Here again, the increase in the intensity of the respiratory murmur alone must induce us to suspect the existence of an obstacle to the free entrance of the air into some portion of the lung.

The skin, which was moist on the second day, remained remarkably dry afterwards up to the termination of the disease. This circumstance seemed to us to augur unfavourably for the total and complete resolution of the inflammation. However, this resolution seemed to have taken place from the fifth day, when on the sixth, both the pain of side, and the reddened sputa, and the fever were observed to reappear. But, fortunately, this return of the inflammation was but temporary, and yielded to another bloodletting.

Let us for a moment fix our attention on the character of the pain which manifested itself at the commencement of the disease. Did this pain, which was felt at the same time on both sides, announce a double pleuritis?

Case 20.—A Swiss, forty years of age, of strong make, and habitually enjoying good health, had been affected with cough for eight days at the time of entering the hospital; he had no pain in the chest. At the time of his admission he had some fever; his breathing was but slightly hurried. The chest, when percussed, sounded well in every part; the respiration was heard to be clear and strong, with the mixture of a mucous and sibilous râle at intervals. One would suppose that the patient was affected merely with simple inflammation of the bronchi, if the viscidity and red tint of the sputa had not apprised us of the existence of an inflammation of the parenchyma of the lung. Tongue red, burning thirst, constipation. (Bleeding to sixteen ounces.) The blood almost immediately after being drawn was covered with a thick coat.

Next day, 11th of April, same state. (Twelve leeches to anus, emollient drinks and lavements.) On the 12th, breathing seemed to have returned to the natural state; sputa those of acute bronchitis; tongue lost its redness; pulse retained a little frequency. Thus, the symptoms of pneumonia had entirely disappeared; however, from the 13th to the 22nd, the cough continued, pulse remained a little frequent, strength not re-established. (Blisters to the arm, emollient drinks, &c.)

On the 21st the patient got some food. On the 22nd the symptoms of pneumonia reappeared; sputa red and viscid; dyspnœa; sonorousness of the chest, and clearness of the respiration still, however, continued; pulse very frequent and small, skin hot, great prostration. Notwithstanding this last symptom, twenty-four leeches were applied to the anus.

On the 23rd, the respiration was more free, the sputa had lost their red tint, and the strength returned. On the following days the skin of the sacrum was covered with an eschar, which made rapid progress, and was succeeded by a large ulcer. But, as if the irritation of the skin of the sacrum had produced a useful revulsion, the cough ceased completely; the slight frequency of the pulse, which still continued, might be accounted for by the extent of the ulcer. The natural appearance of the tongue, the appetite which the patient said he felt, the softness of the abdomen, the regularity of the stools, attested the healthy state of the digestive passages. In this state of things the indication pointed out was to support the strength, so that the system may be enabled to bear up against the profuse suppuration which was going on in the skin of the sacrum. (Watery infusion of quinquina, a little wine, &c., were given every day.) Under the influence of this treatment the ulcer assumed a healthy appearance, and progressed rapidly towards cicatrisation. The patient left the hospital in a few days perfectly restored to health.

This disease was at first but simple bronchitis ; no pain of side indicated that pneumonia had set in : the dyspnœa was not greater than that observed in several cases of intense bronchitis. Auscultation and percussion gave no information ; the respiration, however, was heard with unusual strength, and this circumstance alone indicated some lesion of the respiratory passages ; but the sputa alone were sufficient to discover the nature of the disease. After they had disappeared, the bronchitis continued, accompanied by a febrile disturbance, which caused us to dread a nucleus of inflammation in some point or other of the pulmonary parenchyma. In consequence of a deviation from strict regimen, in the midst of this kind of false convalescence, some symptoms of pneumonia reappeared ; but they yielded to a small blood-letting, which, employed notwithstanding great prostration, caused the latter to disappear, instead of increasing it.

Case 21.—A printer, twenty-two years of age, entered the La Charité the 14th of June, 1820. For about the last three weeks he had had some diarrhœa. On the 11th of June he coughed very much, and felt himself so ill that he did not leave home. On the night of the 11th, he felt beneath the left breast a pain, not very acute, which was increased by coughing, and by deep inspirations. On the 12th and 13th, this pain continued ; the patient was tormented by an almost continual cough ; he kept his bed, and drank some eau de vie, which he vomited. Having entered the hospital on the evening of the 14th, he was bled forthwith.

State on the 15th : breathing short, hurried, much more diaphragmatic than costal ; cough frequent, dry, excited by the slightest motion ; continuance of the pain of side ; chest sonorous ; respiratory murmur clear in every part ; pulse frequent and hard ; skin hot and dry, tongue whitish, great thirst, abdomen free from pain and soft ; from five to six stools for the last twenty-four hours. This person was considered to be affected with simple pleuritis. Thirty leeches were applied to the left side of the chest.

16th of June (fifth day), pleuritic pain gone ; but the patient expectorated some viscid, transparent, red sputa. Dyspnœa considerable ; fever intense. Percussion and auscultation gave no additional information ; however, the inflammation of the parenchyma was not doubtful. (Bleeding to sixteen ounces ; emollient drinks and lavements.)

Sixth day, increase in the viscidity of the sputa, which could no longer be detached from the vessel by inverting it ; they were of a well-marked yellow colour.

Seventh day, reappearance of the pleuritic pain, but on the opposite side. Same appearance of the sputa ; respiration panting ; extreme anxiety ; pulse very frequent ; constant dryness of the skin. (Twenty leeches to the right side.)

Eighth day, pleuritic pain less ; respiration more embarrassed. Still percussion detected no dulness of sound in any part ; auscultation ascertained the murmur of respiration to be natural, but very loud. (He was bled to eight ounces ; two blisters to the legs.) In the night he raved.

On the ninth day, the features, which were considerably altered, expressed the most intense anxiety ; a double pleuritic pain existed, on the right, below the breast ; on the left, near the hollow of the axilla. The inspiratory movements were short and very much hurried. The patient could neither speak nor move without exciting a painful cough. The sputa retained their great viscidity and yellow colour ; the pulse, very frequent, was still hard. Notwithstanding the little success which had attended the numerous bleedings which had been adopted,

M. Lerminier did not hesitate to have recourse to this measure again. He applied fifteen leeches to each side of the chest, and in the evening sinapisms to the lower extremities.

In the night there was still some delirium.

On the tenth day, the same state. On the eleventh, twelfth, and thirteenth days, the pleuritic pain was diminished on both sides ; the breathing became less embarrassed ; the sputa did not change character ; profuse diarrhœa.

On the fourteenth day, the double pain of the side reappeared where it had previously manifested itself; difficulty of the respiration greater than ever. (Ten leeches on each side of the chest ; two blisters to the thighs.)

On the fifteenth day, delirium ; extreme dyspnœa ; suppression of the sputa ; mucous râle in different parts. Death the following morning.

Post mortem. On the right and left, the pleuræ costalis and pulmonalis were covered with albuminous and membraniform concretions. Besides, about half a glass of turbid serum was effused into the right pleura. The tissue of both lungs was, in general, crepitating and healthy ; but in a considerable number of points, more particularly towards their root and in their centre, the two lungs presented small red compact masses, which constituted so many partial hepatisations. In other equally circumscribed points, the hepatisation was not yet complete ; but the pulmonary tissue, very much engorged, allowed itself to be torn with great ease ; the bronchi were intensely red as far as their smaller ramifications. The mucous membrane of the termination of the small intestine, and of the cæcum, presented several small ulcerations, with redness of the membrane around them ; the mesenteric glands corresponding to this portion of intestine were red and tumefied.

The post mortem here showed the species of alteration which the pulmonary tissue may undergo in cases of pneumonia, where the seat of this alteration is not announced either by auscultation or percussion. The numerous partial inflammations which existed did not seem sufficient to occasion death. It is not to them, but rather to the double pleuritis, that we must attribute the fatal termination of the disease. The symptoms became truly alarming, the dyspnœa in particular considerable, and the existence of the patient compromised only at the time of the appearance of the double pleuritis, and particularly at a later period, when it again became exasperated. It will be seen how energetic the antiphlogistic treatment here was, and how unavailing it proved.

Case 22.—A man, thirty-seven years of age, travelled from Gueret to Paris on foot (ninety-two leagues) in six days ; he already had some little cough when leaving Gueret ; the wind blew with great violence. The 16th of March, 1820, the day before his arrival, he felt a general illness, and a great shivering, which lasted a part of the day and all the night of the 16th. On the 17th, he kept his bed. On the 18th, he felt on the right side of his chest, below the breast, an acute pain, which partly yielded to the application of warm cloths. Fever on the 18th and 19th ; he continued to cough without expectoration. On the 20th, he entered the La Charité, and presented the following state :—

Countenance tranquil, presenting a slight yellowish tint around the nose and the orbits ; sensorial and intellectual faculties intact ; muscular strength tolerably good ; decubitus on the back ; breathing scarcely hurried. Deep inspirations increase the pain which still exists beneath the right breast. Perfect sonorousness, and respiration very clear on both sides ; frequent cough ; sputa yellow, viscid, and combined into one jelly-like mass, not very copious ; pulse frequent and small ; tongue moist and clean ; thirst ; anorexia ; abdomen soft and free from pain ; constipation. (Twelve leeches to the right side ; emollient drinks and lavements.)

On the 22nd (seventh day, reckoning from the appearance of the shivering), the yellowish tint of the face, more marked, has extended to the skin of the entire body; pulse very frequent; respiration not much affected; frequent cough; the expectoration has changed its appearance, it is watery and brownish. (Two blisters to the thighs.)

Eighth day, features altered and sharpened; extreme debility; inspirations short and frequent; respiratory murmur heard everywhere with strength; the chest, when percussed, equally sonorous in every part; no expectoration. Pulse frequent; skin hot; tongue moist and white; constant nausea; constipation.

Some hours after the visit the patient vomited some black substance; he became very much sunk and his features altered. At four in the evening, he lay on the right side, his eyes closed, and mouth half open; pulse became thready, and skin burning hot; he died at five o'clock.

Post mortem. The two lungs crepitated on their surface; they were engorged with colourless and frothy serum. On approaching the root of the right lung, its tissue was found reduced to a pulp of a greyish yellow, yielding under the pressure of the finger, and infiltrated with a purulent sanies. On ascending towards the summit of the lung, along its inner surface, some portions were found in a state of red hepatisation. The gastric mucous membrane presented, through all its splenic portion, several bright red dots. The two upper thirds of the small intestine were of a deep livid red colour, and contained twenty ascarides heaped up together in packets in the most inflamed parts, where they were surrounded by a reddish mucus.

Here, as in the preceding case, the seat of the pulmonary inflammation sufficiently explains why it was not announced either by percussion, or by auscultation. The sputa alone indicated not only the existence of pneumonia, but even the degree of the inflammation, and the existence of the grey hepatisation. This patient, as the preceding, did not die in consequence of the constantly increasing embarrassment of the breathing; in him, in fact, the dyspnœa was never very intense, which corresponded with the smallness of the extent of the inflammation. He died in a sort of adynamic state, as is often observed in persons whose pneumonia terminates in suppuration. His death must also have been accelerated by the severe inflammation seated in the intestinal canal. We may remark here how little marked the symptoms of this latter inflammation were.

We have now cited cases of pneumonia in which the expectoration was the only characteristic sign. Though isolated, this sign is of such value that it suffices to detect the nature of the disease. We shall now cite some cases of pneumonias without expectoration, or with anomalous expectoration.

ARTICLE II.

ABSENCE OF THE SIGNS FURNISHED BY EXPECTORATION.

Pneumonia sometimes runs through its different periods, and terminates, either in return to health, or in death, without having been announced by any species of characteristic expectoration. At other times this expectoration only shows itself at the commencement of the disease, and is prematurely suppressed. At other times, in fine, the sputa, which we hitherto observed to accompany the third stage, and which announce it more positively than any other sign, are seen in the two other stages of the disease. Such are the limits of our knowledge, that every time we have collected a greater or less number of particular facts, and we wish to generalise their results, it rarely happens that more extended observation does not discover to us facts contradictory of the former. But as long as these latter are not numerous we should consider them only as exceptions to the general rule which we have laid down. How important it is then that the physician should familiarise himself with such anomalies of the morbid state, in order that he may accustom himself not to overlook a disease, because it happens not to be announced by its ordinary symptoms.

Case 23.—A brazier, eighteen years of age, of delicate frame, felt on the 10th of March 1820, a great shivering followed by an intense heat. He commenced coughing the next morning, without any expectoration. On the third day the expectoration appeared ; on this day he took an emetic. Slight purging since that period. He entered the La Charité on the 13th of March, and on the 14th he presented the following state :—

Countenance tranquil and rather flushed ; decubitus on the back ; frequent cough ; respiration hurried ; slight oppression ; sputa transparent, and slightly reddened, adhering to each other, but readily detached from the vessel when it is inverted ; sound somewhat dull on the posterior part of the right side of the chest; crepitous râle on the same side ; pulse full and frequent ; skin hot and dry ; mouth clammy ; tongue yellowish and moist ; thirst considerable ; four liquid stools since yesterday morning. (Thirty leeches to the anus ; blister to each leg ; emollient drinks).

On the next day, the sixth, breathing more hurried ; dyspnœa increased ; same dulness of sound ; respiratory murmur gone in the parts, where some crepitous râle had been heard the day before ; the sputa, always transparent and but little reddened, were so viscid, that the vessel might be inverted and shaken violently without their being detached ; same state of the pulse ; four stools. Every thing announced hepatisation of the lung. (Twenty leeches to the anus ; two blisters to the thighs, &c.)

Seventh day, same state : sputa scanty.

Eighth day, respiration short, very much hurried ; great oppression ; percussion and auscultation afford the same information. Cough frequent, *no expectoration.* Pulse very frequent, strong and vibrating ; skin hot and dry ; tongue and lips red and dry ; three liquid stools ; urine scanty and red. (Bleeding to twelve ounces ; two sinapisms.)

Ninth day, patient pants ; each inspiration is short ; he *coughs without expectorating ;* he feels no necessity to do so ; pulse, which is also frequent, has lost some of its strength ; skin dry ; four stools ; same state of urine as on the day before. (Sinapisms ; decoction of polygala.)

Tenth day, a little crepitous râle again heard. (*Return of the second stage to the first.*) In other respects no alteration.

Eleventh day, breathing less hurried and a little deeper. Still *no expectoration,* though the cough is very frequent ; crepitous râle very perceptible in the right posterior part of the thorax ; sound equally dull. Countenance more tranquil ; tongue always red and dry ; purging continues.

On the twelfth, thirteenth, and fourteenth days, slow, but perceptible amendment of all the symptoms ; patient extremely weak ; no sweat. Purging continues. (One ounce of senega root for a pint of decoction, with the addition of two ounces of syrup of quince-seed ; tonic mixture with four grains of squill.)

On the following days the breathing became more and more free ; cough not frequent, and *always dry ;* sound dull, crepitous râle. Features are returning to their natural state : strength also returning ; tongue, less red, is becoming moist again ; purging continues. Same prescription. Diascordium at night.

On the nineteenth day the urine was slightly clouded. On the twentieth, twenty-first, and twenty-second days, profuse sweats; continuance of the crepitous râle and of the dull sound; cough rare, and *it is constantly dry*. Pulse retains some frequency; the purging has ceased.

On the twenty-third day, there was no sweat. The natural respiratory murmur begins to succeed the râle; the patient feels very well. At last, on the twenty-seventh day, the respiration is heard equally well, for the first time, on both sides. Dulness of sound no longer exists; the pulse has lost its frequency, and the patient went out on the thirty-third day, perfectly restored to health.

In this individual the expectoration at first presented its usual characters; it appeared on the third day, then its viscidity increased, according as the pulmonary inflammation progressed. But on the eighth day, when the inflammation was at its highest pitch, the expectoration was suppressed all at once, and was no longer re-established up to the termination of the disease. Here there was not merely a suppression of the excretion of the sputa, they really ceased to be secreted. The resolution of the pneumonia took place very slowly; it seemed to be favoured by profuse sweats. From the tenth day, to be sure, the return of the crepitous râle announced a commencement of the resolution. But during the twelve or thirteen days following, this resolution made no progress; the continuance of the dull sound, the nature of the crepitous râle, with which the natural respiratory murmur was not mixed, announced sufficiently that hepatisation still predominated considerably over engorgement; at the end of this time, profuse sweats appeared, and it was only then that a more complete and rapid resolution was observed to take place.

The blood-letting here was much less copious than in several of the preceding cases. A tonic treatment was adopted after the tenth day. It would be difficult accurately to determine what its influence was. It is certain that tonics were administered at a time when there were symptoms of intestinal irritation, and yet these symptoms were dispersed at the same time that the resolution of the pneumonia was effected.

Case 24.—A man, sixty-one years of age, felt general uneasiness on the 6th of June, 1820; there was constant nausea; the same evening he had fever, cough, and dyspnœa. The same state all the night. The next day the symptoms of the preceding day assumed greater intensity, the patient began to expectorate. A physician who was called in prescribed an emetic, a blister to the chest, and demulcent drinks. Much bile was vomited.

The patient entered the La Charité on the 10th of June. On the morning of the 11th (fifth day), he was in the following state: countenance pale and dejected, general anxiety very great, decubitus on the back, great prostration, respiration very much hurried; frequent cough with watery and brownish expectoration resembling prune-juice. The respiratory murmur heard very distinctly over all the left side. On the right some crepitous râle is heard in several points; in other parts, and particularly inferiorly, nothing is heard. Sibilous râle at intervals. Pulse frequent, of moderate strength; little heat of skin. Tongue covered by a thick yellowish coat; bitter taste in the mouth; abdomen soft and free from pain; alvine evacuations as usual. (Two blisters to the legs; twelve grains of ipecacuanha. The preceding evening, a bleeding to eight ounces had been employed.)

The diagnosis was: pneumonia in the first stage, in the upper part of the right lung: pneumonia in the second stage, and probably (from the nature of the sputa) in the third stage in several points towards the base of the same lung. The great prostration, extreme dyspnœa, and finally, the nature of the expectoration induced M. Lerminier to give a very unfavourable prognosis.

The patient died the next morning (6th day), at four o'clock.

Post mortem. Red hepatisation of the lower lobe of the right lung. The middle lobe was partly engorged, and partly in a state of red hepatisation : the bronchi, of a very deep livid red colour, were filled with a brownish and frothy liquid, similar to the matter of expectoration.

This case is important, in as much as it proves that the watery expectoration, similar to liquorice or prune juice, such as has been already described, may appear in the course of a pneumonia, though the lung may not be in a state of suppuration, and there was as yet but hepatisation. But this case, we repeat it, appears an exception.

It is not improbable that if, on the first day, this patient had been bled instead of being vomited, and of having a blister prematurely to the chest, he might not have died.

Case 25.—A joiner, twenty-three years old, of tolerably good constitution, was affected for the last two months with a rheumatic complaint, for which he took some baths at the Hospital Saint Louis. On the 18th of February, after being employed all the day at his usual work, he felt, at five in the evening, a general shivering, which was soon succeeded by a burning heat; during the night he began to cough. On the next day, he still went to take a bath; he went into it with a violent shivering, a stitch in the side beneath the left breast, and an increase of cough. He remained in this state and kept his room to the 22nd; he drank eau sucrée and a little wine. Having entered the La Charité on the evening of the 22nd, he was instantly bled. On the night of the 22nd, he had for the first time a profuse sweat, which still continued on the morning of the 23rd (fifth day). The chest, when percussed, then yielded a dull sound inferiorly on the right. A well-marked crepitous râle existed under the axilla of this side. Inferiorly there was complete absence of the respiration; the patient felt some oppression; his inspiratory movements were hurried and short; he coughed frequently and expectorated some watery sputa, similar in colour and consistence to prune juice. The intercostal spaces on the right side, from the fourth to the sixth or seventh rib, were painful on pressure. Pulse frequent and full; tongue whitish; constipation (he was bled to sixteen ounces). The blood taken on this and the preceding occasion was covered with a thick coat.

On the sixth day the respiration was more free; sweats at night. On the seventh the patient felt quite happy at the amendment which had taken place. Inferiorly on the right the dulness of the sound was less, and some crepitous râle was heard. The respiration, which seemed scarcely embarrassed when the patient lay down, was singularly accelerated the moment he sat up. The stitch in the side no longer existed; the pulse was but moderately frequent; still the sputa retained their unfavourable appearance; sweats had taken place during the night. On the eighth day, the same state—sweats.

On the ninth, tenth, and eleventh days, the expectoration again became purely catarrhal. Under the right axilla, the natural murmur of the respiration had succeeded the crepitous râle; lower down, the latter was still heard, but with a mixture of the murmur of the pulmonary expansion. Frequency of pulse still continues; sweats every night (decoction of polygala). The respiratory murmur became more and more predominant over the crepitous râle. On the 14th day the latter was heard only in some points and at intervals; an abundant diarrhæa succeeded the sweats, and continued for the five or six days following. At the end of this time every thing announced a complete resolution of the pneumonia.

Here again, as in the preceding case, the pneumonia certainly did not pass the second stage, though the expectoration seemed to announce the existence of the third. The symptoms succeeded each other with much regularity. When the patient entered the hospital, there was simple inflammatory engorgement towards the summit of the right lung, and red hepatisation of a part of its lower lobe. This hepatisation soon returned to engorgement: but the complete resolution of the latter was a long time waited for; some crepitous râle was still heard, several days after the expectoration again became purely catarrhal. The sweats, which appeared at the same time that the state of the patient began to improve, were succeeded, on the fourteenth day, by copious diarrhœa. This ventral flux thus spontaneously established, accelerated probably the entire resolution of the pneumonia, and it might be ranked, with some foundation, among the number of critical phenomena. Few bleedings were here necessary; immediately after the second, the resolution appeared to commence, and from this moment the disease was almost entirely left to the vis medicatrix naturæ alone. It is in cases of this kind that we have often seen the employment of blisters accelerate the resolution in a very perceptible manner.

Case 26.—A cook, fifty-six years of age, of delicate constitution, felt on the 5th of July, 1820, an acute pain below the right breast. He said he had coughed and expectorated on the following days. Having entered the La Charité on the evening of the 10th, he was bled. On the morning of the 11th (sixth day) he was in the following state :—

Breathing somewhat hurried; percussion painful, without dulness, over the entire right side of the thorax. The respiratory murmur, very loud and distinct on the left, was succeeded on the right, posteriorly and below, by a crepitous râle, which did not entirely mask it; on the level of the scapula, and under the clavicle of the same side, the respiration was heard with as much strength and clearness as on the left; pulse was frequent and full, face red, strength still retained. The aggregate of these symptoms seemed to announce merely pneumonia in the first stage. However, we were struck with the appearance of the sputa, which, being easily expectorated, consisted of a liquid resembling prune-juice. (Twenty leeches on the right side; emollient drinks and lavements.)

The following morning, the seventh day, the sputa assumed an appearance corresponding to the other symptoms; they were slightly reddened and viscid, such as they usually are in the first stage of pneumonia. The state of the patient in other respects the same.

Eighth and ninth days, the respiratory murmur was heard more clearly where some crepitous râle had existed; the respiration was scarcely accelerated; pulse not very frequent; sputa retain the same appearance. On the following days the expectoration became purely catarrhal. He then became convalescent.

In this patient there was not even a commencement of red hepatisation; the pneumonia was so slight, that it required but a single bleeding, and the application of twenty leeches to the affected side. However, here again we observed the prune-juice expectoration. It showed itself, to be sure, but for a single day, and was then succeeded by the ordinary expectoration of the first stage.

Reflection on the three facts of anomalous expectoration which we have now cited, should convince us that, in pneumonia, the examination of the sputa can afford but greater or less probability, but never entire certainty, either with respect to the degree which the disease has attained or its termination. We now pass to cases of pneumonia not accompanied by any sort of characteristic expectoration.

Case 27.—A man, thirty years of age, entered the La Charité the beginning of September, 1819. He felt on a sudden an acute pain below the left breast. He had violent fever, breathed with difficulty, and coughed very much without expectorating; slight delirium in the evening; same state next morning. We saw him for the first time on the morning of the third day; face pale and dejected; decubitus on the back; inspirations short and very frequent. Sound dull over almost all the extent of the left side of the chest; cough frequent; expectoration purely catarrhal; pulse frequent and small. Every thing inclined us to think that a pleuritic effusion had taken place into the left pleura. (Bleeding to twelve ounces.)

Same state on the fourth day. (Large blister over the left side of the chest.)

On the fifth day, we found the patient in a state of extreme anxiety. He expressed by screams the pains which he felt; he referred the seat of them to the diaphragmatic region. *No expectoration.* Delirium during the night.

On the sixth day the features were seriously altered; the patient was panting; he had expectorated some transparent mucus, mixed with opaque striæ, as in acute bronchitis. Died on the night of the sixth.

Post mortem. No effusion into the pleura; old adhesions on the left, between the pleuræ costalis and pulmonalis. The base of the left lung was united to the diaphragm by a soft albuminous layer not yet organised. All the inferior lobe of this same lung was in a state of grey hepatisation, and the superior in that of red hepatisation. The bronchial mucous membrane was of a bright red colour.

At the time this case was seen, the method of auscultation was not yet generally known; without it, it was impossible not to take the pneumonia here for an effusion; with it, it may be even doubted whether the mistake would have been avoided. In fact, the sound was so dull, from the first day we saw the patient, that there was every reason to think that at that time hepatisation was complete. What then could auscultation have told us? Either we would have heard neither the respiratory murmur, nor râle, nor particular resonance of the voice, which might have equally depended on a considerable effusion or an intense hepatisation; or else we might have heard the bronchial respiration, and that particular resonance of the voice which sometimes approximates to œgophony, sometimes pectoriloquy; but these signs present so many shades, that with the exception of the cases wherein œgophony is well marked, they could not, in our opinion, of themselves suffice to enable one to distinguish an effusion into the pleura from hepatisation of the lung. The case is otherwise when we see the patients before hepatisation is yet complete; then auscultation furnishes new signs, which, notwithstanding the absence of the characteristic sputa, leave no doubt regarding the existence of a pneumonia, as will be proved by the following cases:—

Case 28.—A mason, fifty-two years of age, entered the La Charité, June 21, 1822. He had but recently come to Paris, and then presented the group of symptoms which usually constitute what is called bilious fever; being treated with simple acidulated drinks, this man was completely convalescent in the beginning of July. He had contracted within the last few days a slight pulmonary catarrh; on the 6th of July, this catarrh became worse, and some febrile disturbance set in. On the 7th and 8th, frequent and painful fits of coughing, with a feeling of tearing behind the sternum; continuance of the fever. (Emollient drinks.)

On the 9th, the breathing appeared to be for the first time perceptibly hurried, and the fever was intense. Still the sonorousness of the chest was preserved, the sputa were those of simple catarrh; but auscultation detected a little crepitous râle with the admixture of the respiratory murmur, in the space included between the left clavicle and breast, in the hollow of. the axilla, as well as in the supra and infra-spinous fossæ of the same side. Elsewhere the respiratory murmur was strong, and its great clearness was obscured in some points only by a little mucous râle. M. Lerminier announced the existence of an inflammation, in the first stage, of the upper lobe of the left lung. This inflammation seemed to have succeeded gradually to inflammation of the bronchi. (Twenty leeches below the left clavicle; bleeding to twelve ounces.) The blood was covered with a thick coat; the clot was small, and surrounded by a great quantity of serum.

10th. Same state. 11th. A crepitous râle, more marked, entirely masked the respiratory murmur; the sonorousness was a little diminished beneath the left clavicle. Thus the pulmonary inflammation had progressed; *still the expectoration remained catarrhal.* (He was bled to twelve ounces.) Blood coated as at first.

12th and 13th, no change, and particularly nothing characteristic in the sputa, which are small in quantity, and consist of a white thready mucus. (Blisters to the legs.)

14th. In the parts above mentioned, corresponding to the upper lobe of the left lung, there was nothing heard but a very weak crepitous râle, without any mixture of the inspiratory murmur; beneath the clavicle, and in the hollow of the axilla of this side, the sound was dull, and the breathing perceptibly more embarrassed than on the preceding days. *The catarrhal appearance of the sputa still continues.* Pulse frequent and rather hard; skin hot and dry. *Hepatisation evidently commencing.* Again we have recourse to blood-letting. (*Bleeding to sixteen ounces.*) Blood coated, clot soft, readily dissolving in the serum.

15th, 16th, and 17th, the disease appears to remain stationary; *the sputa have not changed their appearance.* Nothing given but emollient drinks.

18th. State changed for the worse; sound very dull under the left clavicle. Between this bone and the breast, and posteriorly on a level with the spine of the scapula, the bronchial respiration is heard every time the patient inspires. When he speaks, the voice gives a remarkable resonance which does not exist in any other part of the thorax. This double modification of the respiratory murmur, and of the voice, was so marked, that we would readily have attributed it to the existence of an empty tuberculous cavity, if the other signs did not bring us off from this idea. The dyspnœa was considerable. The sputa were not characteristic. The pulse, very frequent, had lost its hardness. (A bleeding to eight ounces; blisters to the thighs.) Blood coated, clot large and very soft.

19th. The breathing was so embarrassed, that the patient could scarcely pronounce, with a panting voice, some few broken words; in other respects the symptoms were the same. (Sinapisms to the lower extremities.)

20th. Crepitous râle under the right clavicle. 21st and 22nd, it continues. On the left we constantly hear the bronchial respiration and the resonance of the voice. The patient no longer expectorates. He died on the 24th, from the constantly increasing difficulty of breathing.

Post mortem. The upper lobe of the left lung presented a red compact tissue, which sank in water, was easily torn, appeared to consist, when torn, of a great number of small red granulations pressed one against the other. The upper lobe of the right lung formed a contrast to the other lobes of this same lung by its very red colour, its less consistence, and the enormous quantity of bloody serum which flowed from it when cut into. The other parts of the pulmonary tissue were healthy. The bronchi, very red, were filled with mucus, which had accumulated from the time the expectoration was suspended. There was no trace of inflammation of the pleuræ. Black blood, partly coagulated, distended the right cavities of the heart. The liver and spleen were gorged with blood. The inner surface of the stomach and intestines was coloured with a considerable injection. The mucous follicles of the great intestine were remarkably enlarged.

We had no occasion here for the sputa characteristic of pneumonia to detect this disease. We have seen few cases where auscultation afforded such positive information, where we were enabled in a manner every day, by the help of this information, to trace the progress of the inflammation with such precision, that the sense of sight could not have been more faithful.

Before the employment of the double method of percussion and auscultation, the dyspnœa would have been the only sign which could incline us to recognise, or rather to divine, the existence of pneumonia. Pulmonary inflammations, without the characteristic expectoration, must very frequently have escaped the investigation of physicians. We must admire, in this respect, the great sagacity of Stoll, who more than once was able to diagnose these latent pneumonias, merely from the characters of the respiration.

The absence of bloody sputa has been for a long time considered as a fatal sign in pneumonia. Van Swieten (Commentaries on Boerhaave) lays it down that pneumonia without expectoration is dangerous, by reason of the organic lesions which they leave after them either in the lung, or in another viscus. Cullen also thought that it was very rare to see pneumonias of this kind terminate in perfect resolution. These principles seem to rest principally on the theory according to which they looked on pneumonia as produced by a morbific matter which settled on the lung. If the two cases now given seem to confirm the opinion of Van Swieten and Cullen, that opinion will be invalidated by the two following cases.

Case 29.—A man, forty-six years old, in the habitual enjoyment of good health, experienced for three weeks an acute pain in the left side of the chest, on the level of the six or seven last ribs of this side. It was increased by inspiration and percussion. The patient had no cough nor fever. This pain was considered merely as rheumatic, and was met by the application of twelve leeches to the side. It still continued; a general bleeding was equally ineffectual. It was removed by a blister. The patient being freed from his pain, was preparing to quit the hospital, when all at once his pulse became very frequent, skin hot, respiration short and frequent. At the same time he had slight cough; *expectoration purely catarrhal.* The respiratory murmur very clear in every part, except posteriorly and on the left side, where some crepitous râle was heard. The chest when percussed sounded well in every part. M. Lerminier considered as certain the existence of pneumonia on the left side. He prescribed a bleeding to sixteen ounces.

On the following day, his state was the same. On the third day sound a little dull posteriorly on the left; some crepitous râle still continues. Up to the ninth day, the chest, when percussed and auscultated, afforded the same signs; the fever, dyspnœa, and cough, still continued. The expectoration was constantly that of simple acute bronchitis. After the ninth day, the râle diminished, as well as the dulness of the sound; the respiratory murmur gradually resumed its natural clearness posteriorly on the left, and at the same time it diminished in the other points of the chest. He was soon perfectly restored to health.

The absence of all characteristic expectoration might have rendered the diagnosis of this pneumonia impossible, before auscultation was employed. Here, too, the pulmonary inflammation was rather slight; it probably did not pass the first stage, but it was remarkable for its long duration: after having remained stationary for several days, it diminished by little and little, without its resolution being hastened or favoured by any critical phenomenon. We may again remark the character of the pain which preceded the invasion of the pneumonia. Did it depend on inflammation of the pleura? After having resisted the bleedings, it yielded to the application of a blister over the seat of the pain.

Case 30.—A boy, sixteen years of age, of delicate constitution, entered the La Charité in the month of April, 1821. During the preceding winter, he had been engaged in work too distressing for his age and constitution. He had a cough for the last three weeks. At the time of his entering the hospital he had slight dyspnœa, and some fever. Posteriorly on the left, the chest when percussed sounded somewhat less clearly than on the right; there, also, there was observed a well-marked crepitous râle, without any of the respiratory murmur being mixed with it. From these signs it was reasonable to admit the existence of pneumonia which was passing from the first to the second stage. However, the expectoration, *was that of simple catarrh.* The weak constitution of the patient, the almost chronic state of the pneumonia, and particularly the little embarrassment in the breathing, induced M. Lerminier to employ but very little bleeding. The first day fifteen leeches were applied to the left side ; and on the following morning it was covered with a large blister, which was made to suppurate. No other medical treatment was employed.

During the fifteen days following, no perceptible change took place, then the sound of the left side became gradually clear, the respiratory murmur again became distinct, the cough ceased, the fever disappeared, and the patient left the hospital perfectly well towards the middle of May.

We have in this case a remarkable instance of those latent pneumonias, the invasion, progress, and symptoms of which present such obscurity, that without auscultation and percussion they would unquestionably be mistaken. Many affections of the chest, often considered to be simple pulmonary catarrhs, with fever, should be reckoned among pneumonias of this kind. Such a mistake would have no harm in it, if it did not more than once cause the employment of suitable therapeutic means to be neglected. This form of pneumonia, when left to itself, in consequence of its nature not being known, and therefore its danger not being recognised, has often been the source of fatal disorganisation of the lung, the production of tubercles in its tissue, &c.

There are latent pneumonias which not only are not announced by any characteristic expectoration, but in which the respiration itself does not seem to be at all interfered with. These pneumonias, *without expectoration and without dyspnœa,* are scarcely ever seen except in the course of other diseases. We shall return to them again.

ARTICLE III.

SIMULTANEOUS ABSENCE OF THE SIGNS AFFORDED BY AUSCULTATION, PERCUSSION, AND THE EXPECTORATION.

We have observed this case but once.

Case 31.—A tailor, fifty-one years of age, entered the La Charité July 22, 1822. This man having been liable to catch cold for several years back, and having sometimes spit blood, coughed very much since the last fifteen days. On the morning of the 19th of July, he felt an acute pain between the left breast and sternum. At the same time, fever, cough more frequent and painful. On the 20th and 21st, the pain continued, and the breathing became embarrassed. On the 22nd, his state was : breathing short and hurried ; speech panting ; a short almost continual cough with expectoration of frothy mucous sputa. Continuance of the pain, which is felt a little in the epigastrium ; the chest, when percussed, sounds well every where ; the respiration is heard in every part to be loud and clear ; pulse frequent and hard ; skin hot and dry. This patient was considered as labouring under acute bronchitis, complicated with pleuritis on the left side. (Bleeding to sixteen ounces ; fifteen leeches over the affected part ; emollient drinks.) Blood is coated.

Twenty-third (fifth day), the pleuritic pain was almost entirely gone; ausculta-tion and percussion gave nearly the same information; the expectoration of no assistance in the diagnosis. However, the dysprœa had increased very much, the fever was intense. (Fifteen leeches to the anus.)

On the sixth day, extreme dyspnœa; face pale, and features sharpened; pulse cannot be counted by reason of its great frequency. In other respects, total absence of pain; some cough with catarrhal sputa; sonorousness of the chest retained; respiratory murmur clear in every part, but very loud. It appeared evident that neither the pulmonary parenchyma, nor the pleuræ were affected. A simple bronchitis could scarcely be considered as the cause of such severe symptoms, and especially of such embarrassment in the breathing. By a negative mode of reasoning we were inclined to believe in the existence of pericarditis, though the pulse was perfectly regular, and the pulsations of the heart presented nothing unusual, except their extreme frequency. (Thirty leeches to the precordial region, a bleeding to twelve ounces.) Blood was coated. In the evening and all the night the patient raved.

Seventh day, he was comatose, and returned no answers to questions. The same symptoms with respect to the chest. (Two blisters to the legs.) In the course of the day the breathing became stertorous, and the patient died the following night.

Post mortem. Subarachnoid cellular tissue of the convexity of the hemispheres very much injected with purulent infiltration; lateral ventricles distended by a great quantity of limpid serum.

The left lung presented near its base, and around the insertion of the bronchi, several points where its tissue was red, compact, and readily torn. In the right lung, nearly in the same places, there was also red hepatisation mixed with commencing grey hepatisation. The summit of the right lung was traversed with some tubercles, surrounded by a very healthy tissue. The bronchi were red and full of mucus; soft adhesions united the anterior edge of the left lung to the pleura costalis.

This case was curious by reason of the absence of all the signs which could have induced one to suspect the existence of a pneumonia. The latter however was real: occupying at one and the same time the two lungs, and having already attained in some parts its third stage, it occasioned great dyspnœa, which, in consequence of the absence of the other signs of pneumonia, one might with some reason refer to a pericarditis. We may repeat here after Morgagni: *Adeo in medicina facile est per ea ipsa interdum decipi, quæ facere videntur ad vitandas deceptiones!* (Ep. 20, par. 30).

CHAPTER III.

PLEURO-PNEUMONIAS COMPLICATED WITH OTHER AFFECTIONS.

Pneumonia would be but imperfectly understood, if it were observed only in individuals, where this disease was not complicated with any other. In this latter case, in fact, it often happens that the inflammation of the parenchyma has no longer the same physiognomy. It often supervenes during the course of other affections, and the time of its invasion sometimes escapes the most attentive investigation; it has already disorganised the lung, before the difficulty of breathing or the nature of the sputa marked its existence. In certain cases, some of its most characteristic symptoms lose their value; we shall see, for instance, in some of the following cases, the signs derived from the more or less free state of the respiration, from percussion and from auscultation, become entirely insignificant, in consequence of certain complications. Do other diseases, on the contrary, set in during the existence of pneumonia? The symptoms of the latter are often obscured, or singularly modified. But these different complications should be studied not only with respect to diagnosis, they are again of importance to be known, whether as aggravating the prognosis more or less, or as very much increasing the difficulties of the treatment. We shall speak in another part of this work, of those latent pneumonias which appear so frequently during the progress of typhoid fevers, and which are one of its most disastrous complications; it often happens that these are not accompanied by any pain, dyspnœa, or expectoration; scarcely is even a slight cough heard. Here we shall cite cases of pneumonias complicated either with other diseases of the lung, such as chronic bronchitis, tubercles, œdema, or with affections of the heart, or with other inflammations, such as pleuritis with effusion, pericarditis, rheumatism, enteritis, peritonitis, variola. We have not unfrequently met some cases in which, under the influence of certain states of the system, of the scorbutic state, for instance, there is observed a sort of passive engorgement of the lung, which may be taken for a pneumonia.

CASE 32.—*Chronic bronchitis complicated with pneumonia.*

A man, sixty years of age, entered the hospital in February 1824. He was affected for several years with a bronchitis, announced by a cough which returned by fits with expectoration of a very abundant puriform mucus. The respiration was habitually a little short; in other respects, this chronic inflammation had not at all altered the functions of nutrition. A few days only before entering the hospital, the cough became much more frequent and more intense; the difficulty of breathing increased, and fever was ushered in. When we saw this patient for the first time, we thought him attacked merely with simple exasperation of the bronchitis. In fact, the expectoration indicated nothing else: it consisted of a clear, glairy mucus, marked by opaque streaks. Auscultation detected, in all the parts of the chest, a very loud mucous râle. The sonorousness of the thoracic parietes was every where equal; pulse was very frequent; skin hot. (Twenty leeches on each side of the chest.)

On the following day, the respiration seemed to be more free; pulse less frequent. But the following days the dyspnœa re-appeared, and went on increasing. The chest, when percussed, ceased to sound beneath the right clavicle, and on the level of the inferior angle of the left scapula. Catarrhal expectorations still continued, mucous râle louder, orthopnœa, asphyxia and death. Blisters had been applied to the chest and lower extremites. Kermes and decoction of polygala had been given internally.

Post mortem. Mixture of the red and grey hepatisation in the upper lobe of the right lung; red hepatisation of a small portion of the lower lobe of the left lung; general redness of the bronchi, which were filled with mucus.

This case affords an instance of what would have been formerly called *suffocating catarrh.* The cause of all the bad symptoms, and of death, lay in the inflammation of the pulmonary parenchyma; but the symptoms characteristic of this inflammation were here so little marked, that, without percussion, nothing would have been recognised during life but simple bronchitis. The expectoration remained catarrhal; the râle occasioned by the accumulation of mucus in the bronchi prevented us from detecting by auscultation the state of the pulmonary parenchyma. We migth adduce here several other cases of chronic bronchitis, equally complicated with pneumonia, and announced by almost the same group of symptoms. The facts of this kind observed by us are sufficiently numerous to enable us to generalise the results, and to deduce from them the important conclusion, that in old persons affected with chronic bronchitis, the appearance of unusual dyspnœa, and of fever in them, very often recognises for the cause a greater or less inflammation of the pulmonary parenchyma. This inflammation, which in many cases is not announced either by the sputa, which continue catarrhal, nor by auscultation, as in the present case, nor even by percussion, when the inflammation is slight and of small extent; this inflammation, I say, may be very easily overlooked. Then one is inclined to consider the worst symptom, namely, the dyspnœa, as resulting from the obstruction of the bronchi by the matter of expectoration, and the rational employment of blood-letting is neglected, or the use of it is even dreaded. Here, however, blood-letting, employed with that reserve which both the age and strength of the patient require, is as much indicated, and its beneficial results just as great, as in the most obvious and declared pneumonia.

CASE 33.—*Pulmonary tubercles—Intercurrent pneumonia.*

A servant man, thirty-five years old, entered the La Charité, Aug. 7, 1822. This man, who was of a delicate frame, had had frequent hemoptysis during the last eighteen months. Tormented with a constant cough, he had lost flesh and strength. At the time of his admission his sputa consisted of greenish, thick flocculi, suspended amidst a great quantity of serum. Auscultation detected a slight gurgling in the right supra-spinous fossa; elsewhere the inspiratory murmur was very clear; there was no pectoriloquy; the pulse, not frequent in the morning, was accelerated every evening, and every night the patient sweated a little in the neck and chest. The diagnosis formed was: softened tubercles in the summit of the right lung; crude tubercles scattered through the remainder of the lungs; healthy state of the pulmonary parenchyma around them. No perceptible change occurred up to August 27th. That day the breathing was more hurried than usual, and there was considerable fever. The patient complained of an acute pain beneath the left breast. (Eight leeches applied to the most painful point.)

On the next day, the 28th, the pain disappeared, but the dyspnœa was increased; streaks of blood were mingled with the sputa, which still retained the same character in other respects. Crepitous râle on the level of the inferior angle of the left scapula; intense fever. (Ten leeches to the left side.)

29th. Some crepitous râle is heard over all the left posterior part of the thorax; under the right clavicle, a mucous râle and gurgling. In other respects his state the same.

30th and 31st. The dyspnœa increased progressively; the same râles were still heard, and the same sonorousness of the chest. On the 1st of September the sputa were suppressed, and he died on the 2nd.

Post mortem. Three or four tuberculous cavities in the summit of the right lung, where during life the gurgling had been heard. Each of these cavities full of a purulent liquid, in the midst of which small portions of tuberculous matter floated, might contain at least a small nut. In the rest of the upper lobe, and in the middle lobe of the right lung, there was found a number of crude tubercles, surrounded by healthy crepitating tissue. Numerous crude tubercles existed also in the left lung; the tissue of this lung contrasted with that of the right lung, by its red colour, the great quantity of bloody serum which flowed from it, and the ease with which it was torn. Bronchi red. Slight hypertrophy of the parietes of the left ventricle of the heart; ulcerations and tubercles in the intestines.

Here, again, the symptoms of pneumonia were very obscure. Auscultation alone revealed the existence of the inflammatory engorgement of the left lung.

The sputa presented no other modification save the appearance of some bloody striæ, which certainly did not suffice to characterise a pneumonia. It is by no means uncommon to see phthisical patients die prematurely of intercurring pneumonias of this kind, which are too often overlooked, and the fatal termination of which might sometimes be prevented by blood-letting, employed more boldly than persons generally dare to do in phthisical patients. There is besides a fact, which we think that we have well ascertained; it is, that phthisical patients may be affected with pneumonia with more impunity than other persons. Every time that in them the inflammation has not attacked too great an extent of the pulmonary parenchyma, its symptoms promptly disappear, and it is seldom fatal; but it has in general a mischievous influence on the increase of the tubercles, it hastens their development, and favours their increase. Very often also it passes to the chronic state; it then constitutes those indurations so frequently observed around cavities, and which are not always the result of an infiltration of tuberculous matter. The following case will afford an example of an acute softening of pulmonary tubercles after a pneumonia.

CASE 34.—*Pulmonary tubercles—Intercurring pneumonia giving rise to their acute softening.*

A man, twenty-eight years of age, entered the La Charité in January, 1822. For the last three years he had had hemoptysis several times, frequent colds, a little habitual oppression; he had wasted considerably. Three days before entering the hospital he felt a stitch in the right side; the two following days the pain continued; there was great dyspnœa. When we saw him, he presented all the symptoms of pleuro-pneumonia in the first stage; breathing short and hurried; cough frequent, with expectoration of viscid transparent and reddened sputa; crepitous râle almost over all the right lung, sonorousness on this side a little less, fever, tongue white, and slight diarrhœa. (He was bled to twelve ounces; emollients.) Blood was coated.

On the fifth and sixth days, the same state. On the seventh day a return of the sputa to the catarrhal state; crepitous râle mingled in part with the natural respiratory murmur; breathing more free. On the following days the crepitous râle diminished, but did not cease altogether. The patient continued to cough, and his pulse retained a slight frequency. (A blister was applied to the right side.)

On the eighteenth day, in the midst of the sputa, which were those of simple bronchitis, there was observed a considerable number of small clots of a dull white. Were these fragments (debris) of tubercles? From this period the expectoration became purulent, hectic set in, and the patient fell into a state of marasmus with astonishing rapidity. On February 9th, twenty-eight days after the pneumonia had commenced, we heard a loud gurgling with doubtful pectoriloquy under the right clavicle, and in the hollow of the axilla of the same side. The patient died on the 23rd, forty-two days after the invasion of the pneumonia, with all the symptoms of pulmonary phthisis in the third stage.

Post mortem.—Immense tuberculous cavity in the summit of the right lung. Crude tubercles in great number in the remainder of this lung; much less numerous in the left lung.

There can be no doubt that the lungs of this individual already contained tubercles before the pneumonia; but these tubercles, as yet crude and not numerous, would perhaps not have become fatal till after a considerable lapse of time. In these circumstances, acute inflammation attacked one of the lungs; it was not severe, and soon yielded, but under its influence the tubercles previously existing in the inflamed lung soon became softened; others formed there, and the impulse once given to this morbid process, the patient ran through the three degrees of phthisis in less than six weeks. We may remark again, as an additional proof of our mode of viewing the matter, that in the left lung, which had not been inflamed, the tubercles were all found crude, and much less numerous, such as they probably existed in the right lung, before it was attacked with inflammation.

CASE. 35.—*Pneumonia with hydrothorax of the opposite side, and aneurism of the heart.*

A man, sixty years of age, who usually worked in the quarries, was attacked, in 1816, with pleuro-pneumonia of the right side. The two following years he enjoyed good health. In 1819 his breathing began to be a little embarrassed; in 1820 his legs became œdematous; rest caused this partial infiltration quickly to disappear. From 1820 to 1822, pulmonary catarrhs were very frequent with him; an increase of dyspnœa. The patient entered the La Charité the 16th of September, 1822; the breathing was then short and hurried; speech a little panting; he coughed but little, and did not expectorate. The chest, when percussed, yielded a dull sound on the left posteriorly, from the inferior angle of the scapula to nearly the base of the thorax. In this same space there was evident œgophony and bronchial respiration; elsewhere the sound was clear, and the respiratory murmur loud and distinct. The heart was heard without impulsion, and with a bruit in the precordial region, at the lower part of the sternum, under the left clavicle; the pulse, remarkably small and intermittent, was free from frequency, and the skin was not hot. The diagnosis was, dilatation of the two ventricles; symptomatic hydrothorax. A bleeding to twelve ounces was prescribed. The blood presented no coat. On the following days respiration was more free; no other perceptible change up to the 27th. (Blister to the left side.)

On the night of the 26th, the patient raved. On the morning of the 27th, he was unusually talkative. The oppression again became considerable; the pulse always very small and intermitting, had acquired some frequency. (Sinapisms to the legs.)

On the 28th, the intelligence again restored, but the pulse retained its frequency; the sputa were for the first time viscid and red. Some crepitous râle was heard posteriorly on the right in some parts; same state on the left. (Bleeding to eight ounces.) Blood coated.

On the 1st and 2nd of October, the viscidity and red tint of the sputa still continued; breathing short and hurried. Still a crepitous râle, without dulness of sound, on the right; on the left, an increase of the dull sound; œgophony less perceptible; however, the delirium had become permanent, the patient was become exhausted, and the features altered; the pulse, which was very small, was scarcely frequent, and the skin was free from heat; tongue pale and dry; stools natural. (Decoction of polygala; sinapisms to the lower extremities.) Died on the 3rd, in a state of half asphyxia.

Post mortem. A pint and a half of serum perfectly liquid, without false membrane, without any trace of inflammation of the serous membrane, was effused into the left pleura. The lung of this side was compressed by the liquid, but was very healthy. Old cellular bands united the pleuræ costalis and pulmonalis of the right side. The right lung presented, both on its surface and in its centre, several red patches; in these parts the parenchyma, gorged with blood, was torn with the greatest ease and scarcely crepitated. These partial pneumonias, separated from each other, had attacked nearly one-fourth of the lung.

The cavities of the two ventricles of the heart were dilated, and their parietes slightly hypertrophied. A small ossification, two or three lines in length, and half a line in breadth, occupied one of the points of the adhering edge of the mitral valve. Another ossification of the same extent nearly was developed at the base of one of the aortic valves. The aorta was healthy, and had its natural calibre; the cavities of the heart were filled with large clots of black blood similar to currant jelly.

A considerable quantity of limpid serum infiltrated the sub-arachnoid cellular tissue of the convexity of the cerebral hemispheres. The lateral ventricles were distended by a somewhat turbid liquid.

When we examined this patient for the first time, it was easy to recognise in him the existence of an organic affection of the heart, and of an effusion into the left pleura. After a large bleeding, the dyspnœa diminished considerably; then, after some days, in which matters remained stationary, the pulse, which till then was not frequent, became accelerated all at once, and the dyspnœa once more increased. The nature of the sputa announced with certainty the existence of a pneumonia; the crepitous râle indicated the seat of it on the side opposite that of the effusion. Here, again, the inflammation was in some measure scattered over several points, and really consisted of a crowd of partial pneumonias separated from each other by a very healthy tissue. At the same time that the inflammation of the pulmonary parenchyma manifested itself, the hydrothorax seemed to increase; such at least should be presumed from the diminution of the œgophony. At the same time also, some delirium appeared, the cause of which was found to be in an inflammation of the arachnoid. So many serious complications were quite sufficient to destroy the patient. The pneumonia, though slight, was here one of the principal causes of death. In fact, a considerable dyspnœa must result from a very slight pulmonary inflammation in an individual affected with an aneurism of the heart and a hydrothorax.

CASE 36.—*Pneumonia with pulmonary œdema and double pleuritic effusion—Intermittent fever at the commencement.*

A man about fifty-eight years of age, of a strong make, was seized the 8th of August, 1822, at eight o clock in the morning, with a violent shivering, which, at the end of an hour, was followed by heat, then by a profuse sweat. On the 9th there was apyrexia. The 10th, a second attack similar to the first. On the 11th, apyrexia. The 12th, the patient entered the La Charité. We saw him at the beginning of the third accession; he felt icy cold in the trunk and extremities. However, the skin was burning hot; pulse hard and very frequent. At nine o'clock, the sensation of cold was succeeded by a sensation of burning heat, and sweating soon set in. Twelve grains of sulphate of quinine were prescribed for the next day, the 13th, to be taken in three doses, at noon, at four o'clock, and at eight o'clock at night. On the morning of the 14th, the patient no longer felt any shivering, but merely a little heat, with some frequency of pulse. On the 15th, apyrexia.

On the 16th, the day of the fever, at ten in the morning, the patient felt a slight shivering, then he was seized with a burning heat over all the right side of the thorax, from the last ribs to the axilla. This pain, which was augmented by the slightest motion, did not cease till ten o'clock at night. In the night a profuse sweat took place.

In the morning there was great dyspnœa; speech short and panting; decubitus on the back. The pain of the preceding day had not reappeared, but the patient expectorated three or four viscid transparent sputa, of a greenish yellow colour. A well-marked crepitous râle was heard on the right, anteriorly and laterally. Posteriorly, on both sides, the respiration was very loud, sufficiently clear, mixed in some points only, and at intervals, with a crepitous râle; it was the same on the left anteriorly. Pulse frequent and hard; skin hot and dry; tongue whitish; diarrhœa. (He was bled to eight ounces.) The blood presented a large crassamentum without a coat. On the 18th, a loud crepitous râle was heard over all the parts of the chest; percussion elicited everywhere a clear sound, except low down on both sides, from the sixth or seventh rib. The pneumonic characters of the expectoration still continued. Pulse 110; forty-three respirations in a minute: the tongue was dry and pale. (Another bleeding to eight ounces; sinapisms to the legs.) A thick greenish coat on the surface of the crassamentum.

On the 19th, his state was the same. He died the next morning.

Post mortem. On cutting into the tissue of the two lungs, an enormous quantity of frothy colourless serum was seen to gush out from every part. The pulmonary parenchyma was everywhere of a greyish white colour, and crepitated perfectly, except near the root of the right lung. In this latter part, there was observed in separate patches a tissue of a livid red colour, which did not crepitate and was very easily torn. These different inflamed portions combined would scarcely have equalled the size of an orange. On the left, from the level of the seventh or eighth rib to the diaphragm, the lung was separated from the thoracic parietes by a liquid of a deep red colour, the quantity of which scarcely equalled half a pint. Superiorly, false membranes of recent formation limited this effusion and united the lung to the ribs. On the right, there existed another effusion similar to the preceding, with respect to its being circumscribed, and also with respect to the quantity of the liquid, but which differed from it with respect to the qualities of the latter. It was a turbid serum, in the midst of which a considerable number of albuminous flocculi floated. A black coagulated blood filled the four cavities of the heart and distended the right auricle in particular.

When this patient entered the La Charité, he was affected with an intermittent fever exempt from all serious complication. The fourth fit was prevented by sulphate of quinine. Towards the time when the fifth should have returned, the shivering and pain of side marked the invasion of the pleuritis on the right side; the respiration soon became embarrassed; some crepitous râle was heard at first in some parts, then over almost all the thorax; finally, pneumonic sputa appeared. The general existence of the crepitous râle seemed to announce a general inflammatory engorgement of the two lungs; there was no such thing, however, and the autopsy proved that this râle depended on a pulmonary œdema. With respect to pneumonia, it also existed, but so circumscribed, that, without an attentive examination, it might have been easily overlooked, and the signs furnished by the expectoration might have been considered as deceitful. This pneumonia, confined to the root of one of the lungs, and occupying but a very small space, could have had but little share in the constantly increasing dyspnœa. Alone, it would probably have given rise only to the symptoms of acute bronchitis; but the serious symptoms, and the patient's death, are sufficiently accounted for, both by the double pleuritic effusion, and by the pulmonary œdema, which, in this case, evidently existed several days before the last struggle.

With respect to the appearance of the pleuritic pain at the time when the ague fit was to return, this case presents some analogy to those cited by M. Broussais, in his *Treatise on Chronic Inflammations,* and in which we see pleuritic and pneumonic affections commence during the shivering of an intermittent.

CASE 37.—*Pneumonia with pericarditis—Fibro-cartilaginous tumours around the heart.*

A printer, twenty-four years of age, had been attacked at Rochelle ten months before entering the hospital with a quartan ague, which lasted for six months. Having arrived at Paris within the last four months, he never enjoyed good health here. He had from time to time attacks of fever, which never presented anything regular in their type: finally, since the last three months, he was subject to frequent diarrhœa. On the morning of the 9th of August, 1822, he felt below the right breast an acute pain, which was increased by coughing, by moving, or by deep inspirations. On the 10th this pain continued.

On the eleventh, the third day, we saw the patient for the first time. The pain had not diminished, the respiration was impeded, the patient coughed frequently, and commenced since the last three hours to expectorate some viscid and red sputa. Anteriorly on the two sides, the respiration was heard loud and clear; laterally on the right side, and posteriorly below the spine of the scapula there was some crepitous râle; every where else the respiration was weak, but clear; in no part was the sound dull. The pulse was full and very frequent, the skin hot, tongue white, mouth foul; two or three liquid stools had taken place within the last twenty-four hours. The patient had sweated much on the evenings of the ninth and tenth; he was very weak, and sat up with considerable difficulty. The spleen was felt below the edge of the ribs, and descended nearly to the umbilicus; the liver also was felt in the right hypochondrium, to the extent of two or three fingers' breadth below the ribs. The existence of a pleuro-pneumonia was evident; the absence of the dull sound, the signs furnished by auscultation, the nature of the sputa, which could be detached from the vessel, announced that the lung was as yet but engorged. (Bleeding to twelve ounces; emollient ptisans.)

No improvement took place after the bleeding. In the course of the day the stitch in the side increased. In the evening and all the night there was a copious sweat.

On the morning of the fourth day, the pain was very acute: the patient had expectorated but three or four transparent red and very viscid sputa. He coughed but little; there was great oppression. Auscultation detected on the right in the same points as on the preceding day, a weaker crepitous râle without the respiratory murmur; laterally on the same side the sound was a little dull; on the left, laterally and inferiorly, some crepitous râle was also heard in different points. Decubitus on the back. The pulse, which was very frequent, was harder, and the skin was burning hot. Thus the inflammation, far from yielding, had increased on the right side, and had also extended to the left lung. This double inflammation admitted of a very unfavourable prognosis. (He was bled to sixteen ounces.) There was great oppression all the day. In the evening and the night, the perspiration was less than on the other days.

On the fifth day the pain was more acute than ever. The patient ventured neither to cough, nor breathe, nor make the slightest movement, for fear of exasperating it; this pain rendered percussion impracticable. The crepitous râle existed in the same parts as on the day before, and still more, it was now heard for the first time on the right, anteriorly from the clavicle to the breast; the expectoration was merely that of simple catarrh. The crassamentum of the blood drawn on the preceding day, small and surrounded with much serum, was covered with a very thin coat; the blood of the first bleeding presented none. (Thirty leeches to the right side; emollient drinks and lavements.)

The pain of the side diminished during the application of the leeches; the next morning it was felt only during the cough; in other respects the same state. (Blister to the right side.) A little time after we had quit the patient, a very profuse sweat took place. It continued for the day and all the night.

On the morning of the seventh day, the skin was still moist; the respiration was evidently more calm, speech more free, the crepitous râle was mixed on both sides with the natural respiratory murmur; the sputa, now thick, resembled those of chronic bronchitis; frequency of pulse had not diminished.

However, at the same time that the symptoms of pneumonia amended, new phenomena were threatening to appear; the patient's intellects became disturbed; the expression of his eyes bespoke delirium; thirty leeches were applied along the jugulars, and the intelligence was soon restored.

From the eighth to the twelfth day the state of the patient improved. The crepitous râle was gradually succeeded by the natural respiratory murmur; but it was not entirely gone. The dull sound disappeared; at the same time the strength became restored with incredible rapidity; profuse sweats took place every night; there was but little cough, which was accompanied with very thick sputa; the pulse retained moderate frequency.

On the twelfth day, the abdomen and chest were covered with a number of small miliary, transparent, conical vesicles, surmounting a very small red patch. On the thirteenth and fourteenth days, this eruption continued. On the fifteenth it was succeeded by a desquamation of the cuticle. A little crepitous râle was still heard in different points of the chest on both sides.

On the evening of the fifteenth day, he was suddenly seized with an excruciating pain in the lower part of the sternum; his chest seemed to him as if screwed in a vice. He passed the night in a state of extreme anxiety.

On the morning of the sixteenth, this pain and sensation of squeezing still continued. The oppression had reappeared worse than ever. The breathing was short and unequal, the speech panting. The pulse again became very frequent; it was very compressible. The features were visibly altered; however, the cough had not increased; the expectoration remained catarrhal; the respiratory murmur was heard as well as on the preceding days; it was even louder. Nothing unusual in the pulsations of the heart. An attack of pericarditis was suspected. (He was bled to twelve ounces.) The blood was thickly coated.

The following day, the seventh of the pneumonia, and third of the pericarditis, the feeling of squeezing in the chest no longer existed; the pain had left the sternum, and was now seated in the precordial region; it was increased by lying on the left side. The breathing was more free, general anxiety less; pulse not so frequent.

On the following days, the pericarditis went on assuming a chronic course; the pain was very obtuse; the patient felt no oppression except when he attempted to move; the frequency of the pulse was moderate; sweating took place every night. The sound soon became very dull on the anterior left part of the thorax, from the base of the sternum to a little above the breast; the strength, which was so rapidly re-established, again sunk; countenance puffed, and very pale; the respiratory murmur continued to be obscured by a little crepitous râle in several parts. In this state the patient wished to leave the hospital; he again entered it at the end of three days, and died two or three hours after. Up to his death he still had the purging, and a dislike for food. Tongue was constantly white; he never vomited.

Post mortem. The lungs, which were gorged with blood, were in every part pervious to the air. In several parts, particularly at the posterior part of the upper lobe of the right lung, and towards the middle part of the left, their tissue was torn with great ease.

About half a pint of turbid serum, then of white, thick pus, escaped from the cavity of the pericardium; this membranous sac, which was prodigiously distended, pushed back the lungs, and the heart occupied but a very small portion of its cavity. The free surface of the serous membrane of the pericardium was uniformly covered by a white false membrane, two or three lines in thickness, presenting a great number of small asperities like those found in the paunch of ruminant animals; beneath this false membrane the serous membrane had retained its natural appearance. In three points of its extent the portion of serous membrane covering the heart was separated from it by a tumour, the size of a nut, presenting all the characters of a fibro-cartilaginous tissue; each of these tumours had pushed the serous membrane before it, and formed a projection on the interior of the pericardium. The heart contained but a small quantity of black half coagulated blood; its internal surface was intensely red; this redness was also observed in the aorta, empty of blood as far as the middle of its abdominal portion; there it diminished, and then was observed only in patches, then disappeared entirely, a little before the bifurcation of the artery.

The liver passed the edge of the ribs by three fingers' breadth; its tissue was a bright red, and very dense. The spleen, which was very large, and also very dense, advanced nearly to the umbilicus. The stomach was remarkably capacious; its inner surface presented, along the great cul-de-sac, a brownish colour, which continued to diminish towards the pylorus; not far from this orifice it acquired a whitish somewhat rose coloured tint; in every part where the brown colour was found, the softened mucous membrane was removed in a pulp by the least scraping. The small intestine presented at its upper part a tint similar to that of the pyloric portion; lower down it was pale. The large intestine presented here and there a little injection; the inner surface of the colon was, moreover, traversed by a considerable number of black points, situated in the centre of a slight elevation of the mucous membrane, with a black circle around this elevation.

A little limpid serum infiltrated the subarachnoid cellular tissue of the convexity of the cerebral hemispheres; the lateral ventricles contained a considerable quantity of it.

One of the most important facts which should be remarked in this case, is, the state of the lung at a time when, without auscultation, which detected a little crepitous râle in some points, one would have thought that the pneumonia was completely resolved; the pulmonary parenchyma was far, however, from having returned to its natural state. This case proves how slowly the complete resolution of pulmonary inflammations is effected, and what great precaution is necessary in convalescence, either to avoid relapses, easier in this than in any other disease, or to prevent, in persons predisposed to them, the formation of tubercles in the portions of the pulmonary tissue which remain engorged and inflamed a long time after all the rational signs of pneumonia have disappeared.

The commencement, course, and progress of the pulmonary inflammation, and subsequently its resolution, were here announced by means of auscultation with great precision. This pneumonia was more formidable for its extent than for its intensity in each point where it existed. In no part, in fact, did it seem to have passed scarcely the first stage. Hence the reason why, after having manifested itself by the most severe symptoms, it was afterwards resolved with considerable ease and rapidity. Two bleedings were employed without the inflammation seeming to amend. The pleuritic pain became more and more intense, notwithstanding these two bleedings; it gave way after the side had been covered with leeches. The resolution began from the sixth to the seventh day. Was it promoted by the blister then applied to the chest? Was it not rather the result of the very profuse sweats which took place at this period?

We should not forget to notice the transient symptoms of cerebral irritation which appeared at the same time that the inflammation of the chest was amended. Let us also recollect the miliary eruption which appeared at a subsequent period, and which the ancients would have reckoned among the number of critical phenomena. We may also observe with what astonishing promptitude the strength was re-established from the moment the intensity of the inflammation ceased to call it to a single organ.

The resolution of the pneumonia seemed almost complete, when the pericardium was attacked with inflammation. We have seen what phenomena marked the outset of this new disease. A bleeding did not remove it, but it moderated the symptoms, and caused it to pass to the chronic state. The dulness of sound announced at the end of some days the formation of an effusion into the pericardium. With respect to the fibro-cartilaginous tumours developed between the heart and serous membrane, there is no doubt but they existed previously to the pericarditis; but not interfering much with the functions of the heart, they had not been indicated by any symptom.

We may notice here the species of hypertrophy of the liver and spleen in a person who had a long time been labouring under quartan ague.

Case 38.—*Pneumonia with hepatitis*

A stone-cutter, fifty-one years of age, entered the hospital in such a state of debility, that no precise information could be obtained with respect to the previous history of the case. All that was known of him was, that for the last ten or twelve days he had been attacked with fever, cough, and dyspnœa; that for the last four days his skin had become yellow. On July 23rd, his state was as follows:—breathing short, hurried, performed simultaneously by elevation of the ribs and depression of the diaphragm; speech panting; decubitus on the back, frequent cough; transparent, very viscid sputa, as green as the resinous matter of the bile. The chest, when percussed, yielded a very dull sound on the right, anteriorly from the clavicle to a little below the breast, and posteriorly from the spine of the scapula to a little above the inferior angle of this bone. In this same extent, anteriorly, no species of respiration or of râle was heard; posteriorly, there was a slight crepitous râle, without any admixture of the pulmonary respiration. Lower down, the respiration was heard loud and clear, as well as over all the left side; pulse frequent and small, skin hot and dry. Tongue covered with a green coating; the right hypochondrium, full and painful, presented greater resistance on pressure than the left. Alvine evacuations natural with respect to quantity and quality. Urine scanty, and causes pain when being passed, and is of a well-marked orange red. The face, trunk, and inside of the upper extremities, were of a yellow colour, bordering on green.

The signs afforded by auscultation and percussion announced hepatisation of the upper lobe of the right lung: however, the sputa were scarcely viscid; their colour, which was of a deep green, was totally different from the red, yellowish, or greenish tint usually observed in pneumonia. The painful tension of the right hypochondrium, united to the jaundice, caused us to suspect the coexistence of hepatitis. The great dyspnœa, alteration of the features, even the seat of the pulmonary inflammation, being more dangerous when it exists in the upper lobes, the advanced stage of this inflammation, in fine, the supposed complication of hepatitis, rendered the prognosis most unfavourable. (Bleeding to twelve ounces, emollient drinks and lavements.) The blood presented a large clot, covered with a dense, thick, deep yellow coat. A bit of paper dipped in the serum received from it a yellow tinge. In the evening the dyspnœa was extreme; in the night the patient raved. On the morning of the 24th, the inspirations were short and very frequent. On the right, laterally and anteriorly, for the space of three or four fingers' breadth below the breast, where twenty-four hours before the respiratory murmur was perfectly distinct, we heard some crepitous râle; thus the inflammation had extended. The sputa retained the same character. Pulse beyond counting; jaundice had become general. (Blister to the right side of the chest.)

Post mortem. The entire surface of the skin of a well-marked greenish yellow tint. Cartilages of the ribs yellow.

The upper lobe of the right lung presented a yellowish grey colour all through its entire extent. From its tissue, which was easily torn, and which was reduced to a pulp by pressure, a great quantity of purulent liquid flowed, which was also of a slight yellow tint. The tissue of this same lobe, when freed by washing from the pus which infiltrated it, presented a great crowd of reddish granulations pressed close together. The greater portion of the middle lobe presented a mixture of red hepatisation and of simple engorgement. Every where else the pulmonary parenchyma was healthy; the right bronchial mucous membrane much more red than the left. A yellowish polypus-like concretion ramifying through the pulmonary artery and venæ cavæ, distended the right cavities of the heart.

The liver passed the breadth of two fingers below the cartilaginous edge of the false ribs. It had a colour like the lees of wine ; its tissue, which was remarkably soft, was reduced by slight pressure to a reddish pulp. The gall-bladder contained but a small quantity of bile, of a deep yellow colour ; the biliary ducts were free ; slight pressure made the bile flow into the duodenum. This last intestine presented not the slightest injection. The inner surface of the stomach was through all its extent a white rose-colour. The rest of the intestinal canal was white ; spleen very soft.

Dura mater coloured yellow ; subarachnoid cellular tissue infiltrated with serum equally yellow ; lateral ventricles filled with a similar liquid.

The sputa did not here announce the degree of the pulmonary inflammation. They were scarcely viscid, and their green colour seemed to depend on the mixture of bile and bronchial mucus ; what proves it, is, that this same colour was found on the upper surface of the tongue. *The nature of the expectoration was then occasioned, in this case, by the disease of the liver.*

The real bilious sputa are very rare, and we shall hereafter endeavour to prove that the sputa which ordinarily receive that name, are nothing but sputa tinged with a greater or less quantity of blood.

We shall not dwell on other circumstances of this case, important with respect to hepatitis, such as the signs announcing this inflammation, the particular alteration which the liver presented, the perfectly healthy state of the duodenum, though the liver was diseased, &c.

CASE 39.—*Pneumonia with general inflammation of the gastro-pulmonary mucous membrane.*

A cabinet-maker, thirty-eight years of age, entered the La Charité, April 23rd, 1822. He had for several days back a severe diarrhœa ; he coughed. and was hoarse ; on the 24th he presented the following state :—

General debility, which was now become extreme ; intelligence dull ; eyes red and watery ; coryza ; tongue red ; deglutition painful ; abdomen free from pain ; diarrhœa ; hoarseness ; respiration a little hurried ; expectoration catarrhal ; frequent cough ; the patient feels not the least oppression ; he neither feels nor at any time felt pain in the chest ; pulse frequent and hard ; skin hot and dry.

There was evidently here general inflammation, but not very severe, of the intestinal and pulmonary mucous membrane. Nothing indicated that the pulmonary parenchyma itself was attacked. One would have said that the individual was on the eve of scarlatina, or measles. (A bleeding to eight ounces ; the patient took in the course of the day twelve grains of Dover's powder in two separate doses.) By the use of this diaphoretic we endeavoured to assist the development of the eruption, if any was to come. In all cases, after having moderated the internal inflammation by a bleeding, it was sought to weaken it, by determining a fluxion towards the skin.

The day after, the 25th, same state ; no sweats. (Twelve leeches to the anus.) On the night following, delirium. 26th. Air of stupor, prostration greater, tongue red and pasty, great thirst, abdomen soft, three or four stools, voice entirely gone ; cough more frequent, breathing more hurried, viscid and red sputa ; sound dull on the posterior and lateral part of the right side of the chest, over nearly all the middle and lower lobe of the lung of this side. Over the same part there was bronchial respiration, peculiar resonance of the voice. (Thirty leeches to the epigastrium ; two blisters to the legs.)

In the evening he became delirious ; when asked if he felt pain in any part, he pointed to the sternal region. He died in the night.

Post mortem. The parenchyma of the middle and lower lobes of the right lung was dense, and impervious to air ; the lower lobe was in a state of grey hepatisation, the middle in that of red. An albuminous, membraniform concretion, of recent formation, was interposed between these two lobes. Some thready mucus, placed between the lips of the glottis, appeared to obstruct this opening. The mucous membrane of the larynx and trachea presented a considerable number of patches and reddish bands. A livid red colour prevailed through all the extent of the bronchi. The heart was of the ordinary size, but there was perceptible hypertrophy of the parietes of the left ventricle, with narrowing of its cavity The right cavities, distended by liquid black blood, contained some white fibrinous clots, closely adhering to the carneæ columnæ.

The posterior wall of the pharynx was intensely red. The œsophagus was white. The stomach was somewhat distended with gas and liquids. The inner surface was divided into two portions, very distinct with respect to their colour. All the splenic portion presented a bright red tint, which was seated in the softened mucous membrane : the pyloric portion was white, without softening. Large veins filled with blood passed beneath the mucous membrane. This membrane was as it were lined by a considerable quantity of liquid brown blood, which it seemed to have exhaled. The three upper fourths of the small intestine presented a red colour, which in several places depended on a sub-mucous injection, but which, in a considerable number of points, depended also on the injection of the mucous membrane itself. In two or three places, where the mucous membrane appeared to be more intensely inflamed, it was covered by a bloody liquid similar to that of the stomach. The lower fourth was white to about one foot above the cæcum. In this latter part there was observed a slight redness of the mucous membrane ; there also appeared two pimples (élevures), each the breadth of a twenty sous piece, projecting two or three lines above the rest of the inner surface of the intestine. Their edges were formed by mucous membrane of a livid red colour. Their surface presented a brownish grey layer firmly adhering to the subjacent parts, which seemed to constitute a real eschar of the mucous membrane; beneath it the tissue was considerably thickened, and of a brownish red colour. There was a close resemblance with respect to form and colour between these tumours and anthrax of the skin. The large intestine was healthy. The spleen, which was large, was very easily torn into a sort of bouillie of a deep black colour.

The meninges covering the convexity of the cerebral hemispheres were injected ; the cerebral substance, which was firm, presented, when cut into, a considerable number of red points ; the ventricles contained but some drops of serum.

The post mortem exhibited in this patient a general inflammation of the gastro-pulmonary mucous membrane, as we had recognised from the first day ; but it also disclosed to us a serious alteration of the pulmonary parenchyma, which we recognised only twenty-four hours before death, and which, beyond all doubt, must have existed for several days back. Up to the time preceding the last twenty-four hours of the patient's life, there were so few symptoms of pneumonia, that we considered percussion and auscultation unnecessary ; a striking instance of latent inflammation of the lung with suppuration of its tissue ! It is only by the very rapid progress of the pneumonia, from the 25th to the 26th, that it can be accounted for, why the dyspnœa, which up to that period was almost none, became all at once so severe. The appearance of the pneumonic sputa on the last day only, is also a very remarkable circumstance. I would be disposed to believe that the state of purulent infiltration of the lower lobe contributed nothing to the production of these new symptoms, and that they were rather the result of a new inflammation which took possession of the middle lobe, and which was sufficiently acute to produce very rapidly the red hepatisation of this lobe Thence, also, the increasing exhaustion and death.

Case 40.—*Double pneumonia, enteritis, and peritonitis of an acute form.*

A smith, twenty-one years of age, had a profuse diarrhœa for the last twelve days, when he entered the La Charité, the 31st of December, 1821. The symptoms on the 1st of January were—Headach; face flushed; tongue whitish; anorexia; abdomen free from pain; several liquid stools; pulse frequent and full; heat of skin. (He was bled to twelve ounces.) Blood not coated. From the 2nd to the 5th of January, there was a gradual disappearance of the fever, diarrhœa, and other morbid symptoms. On the 5th, convalescence. On the 6th, everything changed its appearance: pulse again very frequent; breathing high and hurried; auscultation detected some crepitous râle posteriorly on the two sides. Was this the invasion of a double pneumonia? (Twenty-four leeches to the anus.)

7th. Abdomen covered with a number of small pimples scarcely the size of a pin's head, white, semi-transparent, more sensible to touch than to sight (sudamina). Thirty leeches more applied to the anus.

8th. Countenance expressive of anxiety and pain. The patient, who lies on his back, dreaded the least motion for fear of increasing the acute abdominal pains which he felt for some hours: slight pressure was necessary to increase these pains. Tongue moist and red; belly tense; no stool had taken place. The respiration, which was short and very much hurried, was performed particularly by the elevation of the ribs; the crepitous râle continued posteriorly on both sides; pulse wiry, small, and moderately frequent; profuse sweat all the night; considerable eruption over the abdomen, chest, and extremities. (Thirty leeches to the anus; fomentations and embrocations, with oil of chamomile to the abdomen; emollient drinks and lavements.)

9th. Same state. 10th. The same character of the respiration; auscultation and percussion impossible posteriorly, by reason of the extreme difficulty of moving; abdomen tense and painful; colon distended with gas. (Thirty leeches over the abdomen; lavements of castor oil.)

11th. Dyspnœa increasing; pulse very small and irregular; features very much altered. (Blisters to the thighs.) He died in the evening.

Post mortem. Posterior part of both lungs did not crepitate; from their tissue, which was easily torn, and similar to the tissue of the spleen, there flowed a considerable quantity of bloody serum.

The peritoneal cavity was filled with a liquid of a dirty grey colour, in the midst of which some albuminous flocculi floated; membraniform concretions, still soft and recent, observable among the intestines.

The inner surface of the stomach white, as well as that of the upper four-fifths of the small intestine. The inner surface of the lower fifth was marked with a great number of small round pimples, white or reddish, being, on an average, about the size of a grain of millet, projecting a little above the level of the mucous membrane, at the expense of which they were formed; between these pimples the membrane was white. In this same portion of intestine there was observed a red oval patch, projecting about a line above the rest of the mucous membrane, having its greater diameter in the direction of the course of the intestine, presenting in this same direction two or three inches in extent and about one inch and a half in breadth; its surface was, as it were, wrinkled and uneven; it consisted solely of mucous membrane partially inflamed. Finally, in the part about three or four fingers' breadth above the cæcum, there were observed numerous ulcerations, the base of which was formed by the laminated tissue, which was red and a little thickened, and the edges by the mucous membrane irregularly cut, and presenting a blackish colour to the extent of about a line around the ulcer. This was found only in the cæcum, which was white, as well as the remainder of the large intestine.

When the patient entered the hospital, he had but one of those slight attacks of enteritis, which are soon removed in a few days, by mild treatment. Accordingly, the diarrhœa soon ceased, the fever was moderated, and every thing seemed to announce convalescence, when all at once the pulse once more became frequent, the respiration hurried, and some crepitous râle was heard in the posterior portion of the two lungs. A little time after, the peritoneum was attacked with inflammation; the symptoms of pneumonia then became very obscure; there was no characteristic expectoration; the cough was very slight, the dyspnœa might be very naturally considered as the mechanical result of the pressure on the diaphragm, owing at once both to the peritoneal effusion, and to the gaseous distension of the colon: the simultaneous existence of inflammation in the two lungs, diminishing the sound equally on both sides, rendered the signs afforded by percussion rather uncertain. There remained then but auscultation, but in consequence of the acute peritoneal pain, caused by every change of position, auscultation itself could be but very imperfectly employed. Here then is a case where every thing seemed to concur in obscuring the diagnosis of the pneumonia, and where, in fact, we would only suspect its existence: these are the cases so frequently met in the practice of medicine, and which serve to increase its difficulties so much.

The state presented here by the portions of inflamed lung we think should be looked on as intermediate between simple engorgement and red hepatisation: in an anatomical point of view, this state seems to constitute the transition from the first to the second stage of pneumonia.

CASE 41.—*Pneumonia at the onset of small pox, disappearing according as the eruption was established.*

A man, twenty-two years of age, felt on the 23rd of September 1822, dizziness, and an acute pain in the lumbar region: he vomited. On the twenty-fourth, frequent cough and dyspnœa. Having entered the La Charité in the evening, he was bled. The crassamentum was covered with a thin coat. On the morning of the twenty-fifth, the respiration was high and hurried; sputa viscid, red, and transparent; the chest, when percussed, sounded in general rather badly; the natural respiratory murmur was masked in a number of points by some crepitous râle. Pulse frequent and full, skin hot, tongue moist and whitish, stools natural, face flushed, dizziness continues. We considered this patient as affected with double pneumonia, which as yet was not severe. (Bleeding to twelve ounces; sinapisms in the evening.) The bleeding presented a thicker coat than the first.

Twenty-sixth (third day), difficulty of breathing increased, crepitous râle louder and more general. Countenance, which was constantly flushed, presented an air of remarkable anxiety: there was much fever. Thus, since the last twenty-four hours, the pneumonia sensibly increased; and, however little it may have increased, there was some reason to dread lest it should prove rapidly fatal in consequence of its extent. (He was bled to eight ounces; two blisters to the legs.)

On the morning of the twenty-seventh, same state. In the evening a simultaneous eruption on the face, chest, and arms, of very small, red and conical pimples; these were larger and more numerous on the next morning. Since their appearance the breathing had become more free, the sputa passed again to the catarrhal state. The natural respiratory murmur almost every where succeeded the crepitous râle: chest more sonorous. On the following days, the variolous eruption came out regularly and the symptoms of pneumonia disappeared.

The group of symptoms which marked the onset of this disease announced an inflammatory fever; but the signs of a local inflammation soon appeared, namely, of pneumonia. The latter seemed more serious for its extent than its intensity, in each of the points which it occupied. Several bleedings did not arrest its progress. A fatal prognosis was already forming, when the symptoms of this inflammation disappeared, as if by enchantment, at the same time that the variolous eruption began to develope itself. This eruption was here really critical. Such facts are any thing but rare. Who knows not that the onset of the exanthematous fevers is oftentimes marked by signs of arachnitis, of pneumonia, of gastritis, &c., which cease with astonishing rapidity, the moment the eruption begins to appear?

Pneumonia often appears during the course of small-pox, and it is beyond doubt one of its most dangerous complications. But sometimes it is announced by characteristic symptoms, and then it may be combated with success by an antiphlogistic treatment more or less active. Sometimes, being more dangerous, it is completely latent; it then has often disorganised the pulmonary tissue, before its existence is even perceived. In the majority of cases, it prevents the free development of the cutaneous eruption, and is one of the frequent causes of those irregular cases of small-pox, usually fatal, designated by the ancients malignant small-pox. Hence the importance of the precept frequently to percuss and auscultate the chest of variolous patients, even when their breathing seems completely free. Every time, also, that this double method detects the existence of a pulmonary inflammation, we should not hesitate to have recourse boldly and copiously to blood-letting, the only means of moderating the internal inflammation, and thereby favouring the eruption.

CHAPTER IV.

TERMINATION OF PLEURO-PNEUMONIA BY GANGRENE.

Case 42.—An organ-player, twenty-eight years of age, drank, on the 25th of August, 1822, a great quantity of very cold water, whilst he was in a perspiration. The latter was suppressed; a few hours after he was seized with a shivering, and the same evening he felt below the right breast an acute pain, which became more severe during the night. At the same time there was oppression, and a dry cough; a continuance of these symptoms on the 26th and 27th. On the 28th, the fourth day, he was bled; diminution of the pain, appearance of bloody sputa. On the fifth day, a second bleeding. On the sixth, seventh, and eighth days, a continuance of the red sputa, frequent cough, oppression and fever. The nine days following, the same state. The patient contented himself with keeping his bed, and observing strict diet. Such was the account he gave us. He entered the hospital on the 9th of September, sixteen days after the attack of the pneumonia. The next morning he presented the following state:—

The countenance was pale, the debility and emaciation were carried to a high degree; one would have taken him for a person exhausted by a suppuration of long standing. There no longer existed any trace of the stitch in the side. The patient complained of difficulty of breathing; he lay on his back, a little inclined to the right side; he coughed frequently, and expectorated a liquid of a brownish red colour, similar to the *prune-juice sputa* of the third stage of pneumonia. No sound from the chest, when percussed, posteriorly and laterally; over this same extent neither respiration nor râle was heard. Pulse frequent, without heat of skin. Diagnosis: pneumonia in the third stage. (Large blister to the right side of the chest; kermes; twelve grains of Dover's powder in four packets.)

On the 18th and 19th days, profuse sweats, probably caused by the Dover's powder. On the 20th day, the Dover's powder was suppressed; no sweat; catarrhal expectoration. On the evening of the 21st day, the sputa expectorated during the night seemed to exhale a somewhat fetid odour. In the course of the day there was a perceptible change in the expectoration. It consisted of a liquid of a dirty greenish grey colour, repulsively fetid. On the next morning the dulness on the right side was lessened, and where, on the preceding day, the respiration was none, we now heard a well-marked gurgling. From this it was to be supposed either that a purulent effusion formed in the pleura had emptied itself through the bronchi, or else, what was more probable, that a communication was established between one of these tubes and an ulcerating cavity, in consequence of gangrene of the lung.

On the following days, the increase in the fetor of the sputa, their colour, which was now more and more characteristic, seemed to us to announce in a manner not to be questioned, gangrene of the lung. (Decoction of polygala, Morton's pills, syrup of balsam of tolu.) From this moment the patient wasted away with frightful rapidity; the countenance assumed a cadaveric aspect; an infectious atmosphere existed around him; he constantly lay on his back, with a slight inclination to the right side. The moment he raised himself a little, the sputa flowed into the trachea in such abundance, that imminent suffocation was the result.—Continual sweats, which we in vain attempted to check, at first by preparations of of quinquina, then by acetate of lead, proved to the unfortunate man an additional source of exhaustion. Dating from the 26th of September (33rd day), profuse diarrhœa set in, which continued till the 5th of October, when he died.

Post mortem. In the inferior lobe of the right lung, was found an immense cavity, with wrinkled, brownish parietes, whence an infectious, gangrenous odour was exhaled. A pultaceous, semifluid mass, of a dirty greenish grey colour, filled it: large bronchial tubes opened into it; it was separated from the ribs only by a very thin portion of pulmonary tissue. Around this cavity, which might admit an orange, the parenchyma of the lower and middle lobes presented a mixture of the red and grey hepatisation. The posterior part of the upper lobe of the left lung presented a red colour, which contrasted with the pale tint of the remainder of this lung, whose tissue was readily torn, and scarcely pervious to the air. (Transition from engorgement to red hepatisation.) The stomach and the remainder of the digestive tube were very pale.

This case differs from most of the cases of gangrene of the lung hitherto published, in the gangrene having here evidently succeeded a pulmonary inflammation. It is a real instance of pneumonia terminating in gangrene. The nature of the symptoms, as well as the state of the lung around the ulcer, equally prove it. The period when the portion of the inflamed lung commenced to become gangrenous, cannot be accurately determined; but we were apprised by the nature of the expectoration, of the moment when a communication was established between the bronchi and gangrened part. When the patient died, there was already complete separation of the eschar, and a formation of an ulcerating cavity around it. Observation has not yet demonstrated, whether after the complete separation and discharge of the dead parts, the parietes of the ulcer might not be approximated, cicatrisation take place, and the patient recover.

Death was really hastened in our patient by the inflammation of the left lung, which was recent, and on which depended, no doubt, the bloody striæ which appeared in the sputa a little time before death. We may here remark the white colour of the intestinal mucous membrane in an individual affected with profuse diarrhœa.

Case 43.—A man, twenty-one years old, felt, eighteen months before, a pain below the left breast; at the same time some oppression, cough with bloody sputa.

He was bled, and a blister was applied to the left side of the chest. Since that time the breathing remained short, and the cough continued. Still the patient remained at his usual laborious occupation. Three weeks only before entering the La Charité, he had rather a profuse hemoptysis, and from that period he gave over work. On 3rd of July, 1824, he presented the following state :—

Sound dull over all the left side of the chest, both anteriorly and posteriorly. A little below the level of the inferior angle of the scapula, there was heard a mucous râle, which resembled very closely a cavernous gurgling ; in this same part the bronchial respiration was heard at intervals, and a very loud resonance of the voice. Elsewhere, on this same side, nothing else was heard but different varieties of the bronchial râle. On the right, the sonorousness of the parietes was still preserved, respiratory murmur was loud and clear, except in some points, where a little of the bronchial râle was heard. Speech free ; breathing not perceptibly embarrassed ; breath fetid ; sputa very profuse, consisting of a purulent liquid, of a greenish white, flowing in a stream, and emitting a very disagreeable odour—lies on his back ; can lie equally well on the right and left ; pulse of moderate frequency, without heat of skin. In the evening, a sensation of burning heat all over him, not ushered in by shivering ; sweat at night. No appreciable disturbance in the digestive functions. Considerable strength still remaining ; great emaciation of all the body, except of the face. (Morton's balsamic pills, syrup of tolu, compound hydromel.)

On the morning of the 5th of July, the pulse was more frequent, and the temperature of the skin raised. (Bleeding to eight ounces.)

No perceptible change took place up to the 22nd of July. Towards this period the character of the sputa became changed. With the purulent liquid already described, there began to be mixed another matter consisting of a number of small greyish clots, exhaling a very fetid odour. The following days, these greyish sputa, at first scanty, became more and more copious and fetid ; on approaching the patient's bed, an infectious and gangrenous odour was perceived, which arose both from his sputa and his breath. Since the expectoration presented these new characters, the pulse was habitually small and frequent ; countenance remarkably pale ; every morning we found the patient lying on the left side. Three or four times he vomited his food. In other respects, the breathing was not more embarrassed ; his strength was still retained, and emaciation did not increase. Though the prognosis was very unfavourable, the fatal termination still seemed very distant.

On the 9th of August, the patient arose from bed as usual, went into the hospital garden, and remained there for two hours. The remainder of the day he seemed to be in the same state as on the preceding days. In the evening, when walking in the wards, he found himself ill, and returned to bed, supported by two persons. At within a few minutes of ten o'clock, he was heard to converse freely and with a strong voice ; only it was remarked that his face was more altered than usual. At ten o'clock he died.

Post mortem. Marasmus of all the body, except the face. Cadaveric rigidity. Intimate adhesions of the pleuræ costalis and pulmonalis of the left side. All the lung of this same side hard and impervious to air ; its tissue, when pressed between the fingers, resists and does not crumble ; no liquid escapes from it, either by incision or pressure. Its colour, differing but little from that observed in the healthy lung, was of a greyish red ; when cut in different directions, it seemed traversed by an immense number of yellowish granulations of great minuteness. Were these granulations occasioned by the distension of the pulmonary vesicles with concrete pus ? Were they nascent tubercles ? This same lung on its surface and in its interior presented a vast number of lines of a dull white colour, which crossed each other so as exactly to circumscribe the pulmonary lobules, the limits of which were thus perfectly marked out. These lines seemed to be formed of cellular tissue, thickened, and as it were fibrous, which in the natural state, separates the lobules from each other.

Nearly towards the middle part of the summit of this lung, not far from its external surface, there was found a cavity large enough to admit a good-sized nut. A gangrenous odour exhaled from it: its parietes were lined with a thin layer of greenish matter, which exhibited the pulmonary tissue beneath it red and hard. Several bronchi of considerable calibre opened into this cavity, which was empty. The internal surface of the bronchi was red, the parietes of several of them presented an evident hypertrophy: in some parts they became so very much dilated as to represent small cavities. It was particularly towards the centre of the lower lung that these partial dilatations were observed; they contained a greyish, fetid matter, similar to sputa.

The right lung was healthy, except near its base, where it presented a portion in the state of red hepatisation, nearly equalling the size of an orange, the great friability of which indicated its recent formation.

In this patient, as in the subject of the preceding case, the gangrene of the lung manifestly succeeded an inflammatory state of this organ. The nature of the morbid phenomena, and the state in which the lung was found around the ulcer, equally prove it. In the first patient the gangrene succeeded to acute pneumonia; in the second to one of the most manifestly chronic pneumonias which we have ever seen. The state of induration in which we found the lung, could not be confounded with the state of red hepatisation or purulent infiltration which exists in cases of acute pneumonia. In these cases, in fact, the pulmonary tissue is engorged with liquid, which flows from it when cut into, or when squeezed; it is easily torn, and crumbles readily. Here, on the contrary, the pulmonary tissue was dry, and its cohesion was at least as great as in the healthy state. We shall also notice, as a well-marked character of chronic inflammation, the schirrus-like thickening of the interlobular cellular tissue.

In the subject of the preceding case, the eschar, detached from the pulmonary tissue, was still partly contained in the ulcerous cavity formed around it. Here the eschar had been completely expelled, and the empty cavity no longer retained any other trace of it than the gangrenous odour which it exhaled, and the greenish layer with which its parietes were lined. In both cases the same group of symptoms announced the existence of pulmonary gangrene; the most characteristic of these symptoms was, no doubt, the expectoration. The greyish and fetid sputa, such as we have described, seem to us, in fact, to announce with as much certainty gangrene of the lung, as the red, transparent, and viscid sputa announce acute pneumonia. Tuberculous cavities, and particularly the bronchial mucous membrane in a state of chronic inflammation, may, no doubt, furnish fetid sputa*, but this fetor is far from being that noticed in the two cases last described. The appearance of these sputa is moreover so striking and so marked, that, in my mind, it is quite enough to have seen them once to be able to distinguish them from the sputa of any other disease of the lung.

Since the publication of the former edition of this work, some cases have been published where gangrene also seems to have come on, as in those just mentioned, after that group of symptoms which characterise that morbid state of the lung called *pneumonia*. A case of this kind, which occurred at the Hotel Dieu, under the care of M. Recamier, I shall here cite.

---

* To the cases of this kind already mentioned (Observations on Bronchitis), I shall here add the following:—A phthisical patient, who had repeatedly had attacks of hemoptysis, experienced another; but this time the blood had an extraordinary appearance: at the bottom of the vessel there was found a liquid mass of a brown red colour, which exhaled such fetor that it instantly reminded me of the fetor of gangrene of the lung. On the following day, the matter of the expectoration was of a dirty grey colour, like sanies, and its odour just as repulsive. I concluded that gangrene had formed in some point of the lungs. However, on the following days this odour gradually disappeared: the dirty grey tint of the sputa also disappeared, and the expectoration again became what it usually is in every case of phthisis.

Case 44.—A plasterer, fifty-five years of age, had always enjoyed good health. In the beginning of May he experienced, after a chill which came on him whilst in a perspiration, some pain in the left side of the chest. The following days the pain of the side increased; there was cough; sputa tinged with blood; shivering every evening. He entered the Hotel Dieu, presenting all the symptoms of acute pneumonia: he was relieved by bleeding. At the end of twelve days he went out and resumed his work, but he scarcely had commenced it, when unusual lassitude, severe dyspnœa, and frequent cough, warned him that his disease, so far from having terminated, had now resumed more severity than before. Seven days after he entered the Clinique. That was the twenty-first day of the disease, which was then characterised by the following symptoms:—Skin yellowish; countenance pale and very much changed; frequent cough, with copious expectoration of deliquescent sputa like chocolate, and mixed with small whitish points floating on their surface, and which appeared to be pus, constituted of particles of gangrened pulmonary tissue, crumbling readily under the finger. This putrid pap diffused a well-marked gangrenous odour, and the expired air was impregnated to a high degree with a fetor no less repulsive, which encompassed the patient's bed with an infectious atmosphere. Percussion elicited a dull sound over the entire chest. The respiratory murmur cannot be heard on the right. On the left the respiration appeared bronchial, and was accompanied with a peculiar bruissement which rendered it very confused. Pulse weak but not frequent; the patient is in a state of extreme prostration; he lies on his back, inclining a little to the left. (Lemonade; nitric acid; fumigation with chloride of lime and camphorated vinegar.)

June 2nd (twenty-third day of the disease), the *facies hippocratica* more marked. The odour of the breath and sputa stronger than on the preceding days; the patient seems to expectorate a black blood, which was pure and diffluent, of an insufferable stench, containing a deliquium of small clots of blackish pulmonary substance. The white points are less numerous. The chest is constantly sonorous on the right, where the respiration is puerile, and always difficult to be heard; the left side is much more sonorous. The respiratory murmur is so confused that we can distinguish nothing; pulse in the same state. Some purging without gastric symptoms. A little sleep during the night. (Same prescription.)

The 3rd of June, the countenance a little better than yesterday. In general there is an apparent improvement in the state of the patient; but the pulse becomes more frequent, being now 120, small, and very compressible. The gangrenous odour appears less marked. The purging continues. On the 4th of June (twenty-fifth day) the improvement not kept up.

The prostration increased, lies flat on his back; countenance more seriously changed, and covered with a clammy sweat; features drawn, skin wrinkled, eyes dejected and dull, anxiety greater. The patient still answers questions, but with indifference. Skin hot, pulse frequent, breath and sputa fetid, less so, however, than on the twenty-first day. The matter expectorated is of a greenish diffluent brown; it has less the appearance of black blood. The white points formed by pus have reappeared in great numbers; they assume varied forms, and are scattered over a deliquium which has the consistence and colour of chocolate; sonorousness greater on the left. A gurgling with a sonorous râle at intervals, and a confused noise is still the only sign afforded by the stethoscope. The patient died towards evening.

Autopsy thirty-six hours after. Some old adhesions between the right lung and the pleura costalis. There is on this side a slight effusion of bloody serum, but in other respects the lung was healthy, crepitating, and presented nearly the pneumonia of dying persons ; a reddish frothy serum flowed from its incision.

The left lung contracted very strong adhesions, particularly posteriorly and superiorly, and it cannot be removed from the thoracic cavity without being torn in its middle and posterior part, where the false membranes have more consistence, and where it is itself more readily torn. There then flowed into the pleura a great quantity of a blackish pap, similar to that which constituted the sputa, diffusing a fetor no less repulsive, and which may be estimated at more than half a pint.

An incision made along the posterior edge of the lung, exposed an immense ulcerous cavity occupying the whole extent of the pulmonary organ, and partly filled with a putrid substance, in every respect resembling, both as to appearance and fetor, that which fell into the pleura the moment the sac was torn. On pouring water into this cavity, the water took up the deliquium, and we were able to see beneath it the polished and whitish parietes of the membrane, which lines all the interior of the sac, and to which some portions of the blackish substance branched out into small filaments still adhere, exactly resembling in colour river weeds. These filaments were attached to the inner surface of the cavern by the bronchial ramifications, and their extremities were free and floating in the cavity. The slightest rub was sufficient to detach them, and there then remained merely the uniformly white parietes of the cavity. These parietes were formed by a false membrane of about a line in thickness, which separated the dead part from those which retained their vitality ; the latter, attacked by the inflammation, passed into the state of red hepatisation, and did not float in the water.

The false membrane circumscribed a cavity which occupied all the interior of the lung, leaving at the summit only about an inch and a half of pulmonary substance, which was passed to the state of grey hepatisation, and at the base a layer about half the thickness of tissue which had attained the same stage of inflammation. The inner surface near the origin of the bronchi again presented about an inch in thickness, whilst all the external and anterior surface was reduced to some lines ; the lower edge of the lung retained its crepitation to the extent of two lines all along its periphery. The part of the pulmonary tissue, which preserved the form of the organ, and which might be justly compared to mere bark, was affected through all its substance with the grey hepatisation.

In the summit of the lung, which was in the state of grey hepatisation, an incision developed a great number of miliary tubercles in a state of crudity in the centre, and exhibited posteriorly and superiorly a cavity capable of lodging a small nut, which resulted from the suppuration of several tubercles combined into a single cavity, which was filled with a homogeneous, whitish pus.

Nothing particular was observed in the other organs, except three superficial ulcerations in the vicinity of the ileo-cæcal valve.

RECAPITULATION,

OR

GENERAL HISTORY OF PLEURO-PNEUMONIA.

59. The symptoms of pleuro-pneumonia, the greater or less danger it brings with it, the modifications which its treatment may undergo, are connected with the different states of the lung, with respect to its different degrees of inflammation. We shall, therefore, commence the history of pleuro-pneumonia where it is usually terminated, that is, by the description of the anatomical characters of inflammation of the lung.

Laennec has admitted three degrees in the inflammation of the pulmonary parenchyma, to wit, simple engorgement, red hepatisation, and grey hepatisation. We shall adopt this language, because it is simple and generally received. We think, however, we should remark that the tissue of the lung affected with inflammation, bears too little resemblance to the tissue of the liver for the term *hepatisation* to deserve to be looked on as very exact. The lung inflamed to a certain degree and the liver in its healthy state differ from each other particularly in their consistence. In the state usually denoted by the term red or grey hepatisation, the tissue of the lung is exceedingly softened, and very friable; in some cases, much more rare, it is harder than when healthy. Should these two states, of softening and hardening, so different from each other, and which, moreover, bring with them differences in the symptoms, be confounded under one and the same denomination? Were we not convinced of the extreme reserve with which unusual terms should be introduced into medical language, we would propose to lay down the following nomenclature for the different degrees of pneumonia. In acute pneumonia, we would admit three states of the lung, which we would designate by the names of *engorgement* (engouement), *red softening*, and *grey softening, with simple purulent infiltration or formation of abscess.* In chronic pneumonia, we would recognise these same states, and two others also, which we would call *red hardening* and *grey hardening*. We shall describe these different degrees.

60. In its minor degree of inflammation, in that degree designated by the name of simple engorgement, the pulmonary parenchyma still crepitates; it may be pressed, and drawn with considerable force, without being torn. However, the crepitation is less in it than in the healthy state. On compressing the tissue of the organ, it is perceived that there is more liquid than air in the pulmonary vesicles. Oftentimes this crepitation then becomes so little, that one would suppose he pressed the lung of a fœtus which had not respired. The colour of the engorged part is changed; its brown or vermilion colour contrasts with the grey or pale rose-coloured tint of the portions of the lung which have remained healthy. If an incision be made into these engorged parts, a reddish frothy serum is seen to flow from them in considerable quantity. If the engorged parts, when cut into in different directions, be subjected to a long-continued pressure, and to frequent washing, these parts are freed from the liquid which they contained, and they are rendered as crepitating, as elastic and as void of colour, as the portions of the lung not affected with inflammation.

This simple engorgement, without any other alteration of texture, is observed only in the case of slight inflammation. But, however little the intensity of the inflammation may be, the pulmonary parenchyma diminishes in consistence; when pressed between the fingers, it crumbles with ease; it becomes friable. The liquid which flows from it, is less copious and particularly less frothy: it then presents considerable resemblance to the tissue of certain spleens, which are easily crumbled, without, however, being reduced to a pulp. This state constitutes an intermediate state between simple engorgement and the real red softening (the hepatisation of authors). It is the transition from the first to the second degree of pleuro-pneumonia.

As long as the lung is only infarcted* (*engoué*) without any other change of texture, it is difficult to decide in all cases, whether this infarction is really inflammatory, or whether it is not the mechanical result of the sanguineous engorgement, of which the lungs are almost invariably the seat in the last moments of life, or even of simple cadaveric infarction. To distinguish these two states, it is necessary to have regard less to the colour of the pulmonary tissue, than to its consistence; if any increase of friability be ascertained in this tissue, it should be considered as inflamed †. Now, in almost all cases where there really has been inflammation, this increase of friability will be observed, because it is extremely rare that death should be the result of a pneumonia, which shall not have been severe enough to destroy more or less the ordinary consistence of the pulmonary tissue.

From this simple engorgement (engouement) then, from this commencing softening just described, the inflamed lung rises by little and little to another degree, in which, at first sight, it bears considerable resemblance to a liver, which, gorged with blood, is of a uniformly red colour. In this state the lung, having become impervious to air, no longer crepitates; it no longer floats on water. If it be cut into, there still flows from it a red liquid, which is not frothy, and which is much less abundant than in the preceding degree. Examined with the lens, the pulmonary tissue then appears to be composed of a crowd of small red granulations, pressed one upon the other; when torn, it often presents to the naked eye these same granulations: it is also torn with much more ease than in the healthy state. Its friability is very great; in many cases it is sufficient to press it slightly between the fingers, to crumble and reduce it to a reddish pulp; this *softening*, similar to that presented by several other inflamed tissues, establishes an important distinction between the parenchyma of the lung attacked with inflammation, and the parenchyma of the liver, which is thus soft and friable only in certain pathological states. To designate this second degree of inflammation of the lung by the term *red softening* is, in our opinion, to give a more exact idea of it than to call it by the term hepatisation. In this degree, the size of the diseased lung always appears greater than the size of the healthy lung; but this increase of size is but apparent; it depends on this circumstance, that the lung, deprived of air, no longer collapses as that which is still filled with it at the time the chest is opened.

In a still more advanced stage, the pulmonary tissue dense, compact, and impervious to the air, as in the preceding stages, presents a characteristic greyish colour. If we examine it with the lens, we find the same granulations as those just described, only they are white or grey, instead of being red. Often, being larger, they become visible to the naked eye, particularly after their existence has been already ascertained with the lens. These granulations present, also, numerous varieties with respect to their arrangement, their number, and their size: thus, in a given space, we sometimes find some only, separated or agglomerated; sometimes they are grouped in great quantity; sometimes, in a word, they are no longer perceived, and we remark only a uniformly smooth grey surface. We shall presently endeavour to account for these differences of appearance.

---

* The term *engoué* is usually rendered into English *engorged*—the necessity of using some different term in this place will appear from what follows.—Trans.

† Since the above was written, new researches have inclined me to think that the increase of friability of the pulmonary tissue, may be very well owing to the simple fact of an accumulation of blood, which may be altogether mechanical, and may have been established during the last struggle, or may have supervened after death.

Here, as in the preceding stage, the pulmonary tissue is softened and very friable. The quantity of liquid which penetrates the parenchyma of the lung is sometimes such, that on cutting it a greyish liquid is seen to gush from it, a real pus, which has appeared to us uniformly devoid of odour. At other times, merely making an incision is no longer sufficient to make the pus flow from it; but if the tissue be slightly compressed without crumbling it, the pus appears on the incised surface in the form of small drops, which seem to issue either from the orifices of capillary bronchi, or from the granulations themselves, which cease to be visible, after several pressures have been made on one and the same portion of lung. In this stage the more the pulmonary tissue is soaked in liquid, the more softened and friable it is: when pressed between the fingers, it is reduced into a greyish pulp, which differs not from the liquid itself, except in having a little more consistence. From this extreme friability, it happens that it is enough to sink the finger gently into any point whatever of the parenchyma, in order to produce there the formation of a small cavity filled with pus, which may be taken for an abscess of recent formation. Instead of designating this third stage by the name of grey hepatisation, we think it would be better to designate it *grey softening*.

Such are the alterations which characterise the different stages of acute inflammation of the lung. When the inflammation is chronic, the lung may still present these same alterations; but, further, it presents two other states which are not met in cases of acute inflammation, and in which the pulmonary parenchyma, instead of being soaked in liquid and softened, is dry and hard. Sometimes it preserves a pale red colour; sometimes, and that is the most ordinary case, it presents a grey tint. As we have admitted a red softening and a grey softening, in the same way we shall also admit of *red induration* and *grey induration* *.

We are not at all astonished at seeing the pulmonary tissue thus pass to the state of induration after having been first softened; a similar phenomenon is presented to us by a great number of tissues or of organs affected with inflammation. Thus, the cellular tissue, when inflamed, first acquires great friability; if the inflammation of which it is the seat be not resolved, if it pass to the chronic state, the cellular tissue soon loses this friability; far from becoming softer, it becomes, on the contrary, more dense, and much thicker; it often presents as it were a schirrous hardness. This termination by induration may be observed particularly, either in the cellular tissue surrounding old cutaneous ulcers, or in the submucous or subserous cellular tissue; in a word, it may be seen also in the cellular tissue which connects the different lobes of the lungs. This tissue, which is scarcely visible in the natural state, acquires, in some cases of chronic pneumonia, such thickness, that it is seen on the surface of the lung, and in its interior in the form of white lines, of semi-cartilaginous consistence, surrounding and circumscribing each pulmonary lobule.

It is common enough to find the three stages of acute pneumonia (engorgement, red softening, and grey softening) combined in one and the same lung, whether the inflammation may not have proceeded with equal rapidity in all the parts which it laid hold of, or whether it attacked them only successively.

The grey softening may form in a very short space of time. We have found, for instance, the entire of one pulmonary lobe, already arrived at this third stage before the end of the fifth day.

In the opinion of some physicians, chronic pneumonia is so rare an affection, that they even doubt whether they have ever seen it. Professor Chomel, in his article Pneumonia in the Dictionnaire de Médecine, twenty-one vols., says, that he saw but twice in the dead body, in the space of sixteen years, those lesions which characterise, according to him, chronic pneumonia. For our part we have seen it much more frequently, and it does not seem to be so rare an affection as has been stated. Its anatomical character we hold to be a hardening of the pulmonary tissue, which has become at the same time impervious to air, and which presents a yellow, grey, brown or black tint. Sometimes we found in this state of hardening, either an entire lobe, or a considerable portion of a lobe ; sometimes it is lobules isolated from each other, which are thus indurated, and they are separated by a perfectly healthy tissue. Sometimes, in a word, the chronic pneumonia is still more circumscribed, and it attacks but a certain number of vesicles in one and the same lobule ; in this latter case the lungs are traversed by a greater or less number of granulations, which have been considered, erroneously we think, as products of new formation. Again, in one or other of these three forms, the chronic pneumonia may succeed the acute form, which is rare ; it may form insensibly, without the signs of an acute affection having ever been observed at any period of its existence ; this second case is much more common than the first. Patients then present nothing but the symptoms of chronic bronchitis, accompanied with a dyspnœa which goes on increasing. Shall we add here that it is not at all rare to find undoubted traces of chronic inflammation around tubercles, particularly when they are softened, and transformed into caverns?

---

* To these two species of induration of the pulmonary parenchyma, we should add the black induration, which some persons have, incorrectly in my opinion, set down as a peculiar tissue, under the name of *pulmonary melanosis* (see next Part), and my *Pathological Anatomy.*

61. What is the part of the lung principally affected in the different stages of chronic pneumonia ? Is it principally the intervesicular cellular tissue ? Is it rather the vesicles themselves ? Nothing certain can be affirmed on this subject ; we shall however state what seems to us most probable.

When there is yet but simple engorgement, it is recognised during life by the existence of the crepitous râle. Now we shall endeavour to prove in a subsequent part that this râle is but the diminutive of the mucous râle ; and that if it be certain and beyond doubt that the latter is seated in the bronchi, we cannot refuse to admit that a mixture of air and liquid in the smaller bronchi produces the crepitous râle ; but the pulmonary vesicles appear to be nothing else than the last extremities of the bronchi expanded into a cul de sac *. It is then in these vesicles that the crepitous râle of the first stage of pneumonia appears to have its seat. If this proposition be accurate, it follows that pneumonia consists essentially in the inflammation of the pulmonary vesicles, the inner surface of which secretes a liquid at first muco-sanguinolent, and then purulent.

According as the inflammation proceeds, the liquid secreted becomes thicker and more viscid ; it can no longer be expelled from the cavity where it is contained ; it accumulates there, obstructs and distends it, and gives rise to those numerous granulations, which appear peculiarly to constitute the red hepatisation of the pulmonary tissue.

At a later period still it is no longer mucus, or blood, but pus which is poured out by the inner surface of the vesicles : this pus fills them in its turn ; thence arise the grey granulations which the pulmonary tissue presents in this stage of the inflammation, and which seem to be nothing but the vesicles filled with pus. Several of these granulations often retain a pale red tint, a sort of mixture of grey and red colour, which seems to result from the mixture of pus and blood in the vesicle. If a portion of lung in the state of grey hepatisation be pressed, the pus is seen to issue from it in the form of drops, each of them seeming to come from a vesicle whose parietes have been burst. If the distension of the vesicles be general and carried to a great degree, they ultimately become confounded together, and the granular appearance is lost.

---

* See the splendid work of M. Reissessen on the structure of the lung.

The parietes of the inflamed vesicles become soft and friable, as all tissues do which have been attacked with inflammation. Thence the remarkable softening and extreme friability presented in this case by the pulmonary parenchyma. With respect to the last stage, in which the pulmonary tissue is dry and hard (grey induration), this variety may be explained by the consistence of the liquid which fills the vesicles, but more particularly the thickening and hardening of the parietes of the ventricles which are in a state of chronic inflammation : is not this the case, as we have already said, of a great number of chronic inflammations?

The ideas now expressed regarding the seat of pneumonia have, we repeat it, but mere probabilities to support them. In order to demonstrate their exactness, it would be necessary, scalpel in hand, to demonstrate the inflammation of the vesicles; now, this has not been done yet, and probably never can be done*. These ideas appear to us, however, entitled to some attention, because by viewing pneumonia in this way, we can better account for several phenomena, and we can explain much better the different signs furnished by auscultation †.

62. We have just seen that there is a stage of pneumonia where real pus is scattered through the pulmonary parenchyma, whatever be the part it occupies.

---

* I have stated in my work on *Pathological Anatomy* some researches, which bring under the cognisance of the naked eye the modifications which the parietes of the pulmonary vesicles undergo in pneumonia.

† With respect to the seat of pneumonia we extract the following passage from the third volume of the Cyclopædia of Practical Medicine, article *Pneumonia.* After quoting the opinions of several pathologists on this subject, some of whom, and among them our author, place it in the air-vesicles and minute bronchi; others consider it to be in the interstitial cellular texture between those, whilst a third opinion supposes it to occupy all those indiscriminately, Dr. Williams, the able writer of the article, gives it as his opinion, that the plexus of capillary vessels, rather than any distinguishable texture is the essential seat of pulmonary inflammation. "On inspecting," he says, "by the aid of a simple lens the margin of a slightly inflamed spot of lung, numerous vessels may be seen, distended with blood, passing across, around, and between the vesicles, with very little regard to their form or disposition ; and as the scrutiny is extended to a part more inflamed, these vessels are so multiplied and confounded with each other, as to be no longer separately discernible. In this state it is impossible to distinguish whether the tunics of the cells, or the tissues which connect them, are most affected, for they all appear one mass of redness, in which are seen the cells irregularly diminished in size, and containing bloody serum with bubbles of air. The interstitial cellular texture, where it can be separately discerned, namely, between the lobules, and around the larger bronchi, is generally less vascular and of a lighter colour than the other parts, and in some instances appears to be nearly free from the inflammation. The lining membrane of the minute bronchi, although generally of a deep red colour, is sometimes bluish red, as if from redness under it rather than in it; and on tracing these tubes higher, the presence of this inflammatory character is very uncertain. These examinations and some pathological considerations induce us to consider the capillary ramifications of the pulmonary artery and veins to be the proper seat of pneumonia, and that these may involve more or less of the tissues through and around which they pass. Thus through them the tunics of the air cells, particularly the submucous, commonly become the seat of inflammation; whence are formed the granulations of ordinary hepatisation. When, again, the inflammation is confined more to the inter-vesicular plexus and tissue, which appears to be the case in the more congestive form of inflammation where vessels larger than capillaries are involved, the uniform non-granular form of hepatisation, which we have before described, is produced. If, as is commonly the case, the inflammation extends to the extremities of the bronchial arteries, which are said by anatomists to anastomose with the pulmonary, the mucous membrane lining the vesicles and minute bronchi partake of the inflammatory action, and exhibit it in the manner peculiar to mucous membranes by the secretion of a viscid mucus, and afterwards of pus. So, likewise, when the inflammation reaches the surface of the lung, it is generally, but not constantly, propagated to that portion of the pleura, which invests it and derives its vessels from it ; and this extension of the inflammation may add another character to such instances of the disease. But it is its seat in these extensive capillaries of the lungs through which the blood of the whole system is continually passing,—it is this affection of so considerable and important a portion of the circulatory system that causes the severe and intense characters of pneumonic inflammation; and the more constantly we hold this in view, the better shall we understand the pathological history of the disease and its important relation to remedial measures."—TRANS.

Is this pus collected at times into one focus, so as to constitute an abscess? At the period of the infancy of pathological anatomy,—I mean before the works of the French school of the nineteenth century appeared,—physicians regarded the formation of an abscess in the lung as a very common thing, in consequence of its acute or chronic inflammation; but it is now very evident that, in their cases, they really speak of interlobular pleuritic effusions, or softened tuberculous masses. The ancients also thought that pneumonia was often cured by the spontaneous evacuation of one of these abscesses, as they called them, which they designated by the name of *vomicæ.* Now, it is well known at this day, that these vomicæ are the result of changes which differ essentially from an abscess of the lung: sometimes it is a large tubercle, which is softened, and is discharged all at once through the bronchi; sometimes it is pus collected in one of the pleuræ, which has perforated the lung, and has been suddenly expectorated. Sometimes, in a word, as we have frequently seen instances, it is merely a profuse purulent secretion, poured out suddenly by the bronchial mucous membrane [*].

Since pathological anatomy has come to be cultivated with more strictness, those cases have been set down as very rare, where pneumonia has been seen to terminate by the formation of an abscess. At the period when Laennec published his work on auscultation, purulent collections were found but five or six times in the inflamed lung; they were yet very small. The largest abscess met could scarcely admit the ends of three fingers joined together. As for ourselves, it has never fallen to our lot more than once to see a real abscess after a pneumonia at the La Charité: it was in the case of a patient who died the nineteenth day of inflammation of the lungs; the middle and lower lobes of the right lung were in a state of grey hepatisation. Towards the middle part of the lower lobe, there was observed nothing but a sort of pap (bouillie) of a dirty grey colour, in the centre of which was found real pus, which exhaled no odour; the pulmonary tissue around, which was at first very soft, and, as it were, broken down, gradually recovered a greater consistence; no particular sign had disclosed to us during life the existence of this abscess. Auscultation was then scarcely known (1819). We have seen another well-marked instance of abscess, after pneumonia, in an individual whose lung was presented to the Royal Academy of Medicine, by Dr. Honoré, in 1823. The patient had died of acute pneumonia, in the wards of the infirmary of Bicêtre: in the centre of a hepatised pulmonary lobe, there existed a rounded cavity with smooth parietes, capable of holding a large apricot: it was found full of pus.

We have already noted a circumstance, which, more than once, has induced persons to believe in the existence of an abscess of the lung. It is the extreme ease with which a cavity may be formed by slight pressure in the middle of the soft and friable pulmonary tissue, such as it is found to be in the third stage [†].

63. Pneumonia may also terminate in gangrene, as we have already seen. But this, again, is nearly as rare a termination as that in the formation of abscess. The ancients have evidently described under the name of gangrene alterations of

---

[*] "The general testimony of the latest pathological anatomists is in support of the opinion of Laennec, that the termination of pneumonia in abscess is of rare occurrence. Broussais says that he only met it once; and in this case the inflammation was produced by a musket-ball lodged in the lung for six years. . . . . If we compare these opinions with the writings of Morgagni, Baillie, or, in fact, any writer on morbid anatomy prior to the last twenty years, or with the notions of the less informed of the present day, we shall be surprised at their discrepancy with the frequent mention of abscess of the lungs by these latter. The common error has been to mistake tubercular vomicæ, which are of very common occurrence, for abscess; and it is not easy always to avoid the mistake, even in the present state of our knowledge."—Dr. Williams, loc. cit.—Trans.

[†] Since the publication of the first edition of this work I have twice met, in the lungs of new born infants, abscesses which bore no resemblance whatever to a tubercular mass.

the lung very different from that state. In general they were very much inclined to call it gangrene every time an organ presented to them a brown or black colour. Their works are filled with accounts of gangrene of the brain, lungs, liver, intestines, &c.; and yet nothing is more seldom seen than real gangrene of these different organs. It appears also very well proved that the lung may be affected with primitive idiopathic gangrene without it being preceded by any sign of inflammation. This however is not the place to speak on that subject*.

64. Pneumonia may be simple or double; in other words, it may attack but one lung, or both at the same time. In one and the same lung it may be general or partial, attack the upper or lower lobe, be confined to the base, the root, or the centre. It has been said that these different seats of pneumonia have been all equally frequent. We shall just detail some numerical results on this matter.

Out of one hundred and fifty-one pneumonias observed at the La Charité, ninety affected the right lung, thirty-eight the left lung, seventeen existed simultaneously on both sides; the seat of the other six was not known.

Out of one hundred and fifty-nine pneumonias recorded in the works of Morgagni, Stoll, De Haen, Pinel (*Médicine Clinique*), and Broussais (*Traité des Phlegmasies chroniques*), thirty-one were observed on the right, twenty on the left, and eight on both sides at once.

Thus, on the entire, out of two hundred and ten pneumonias, we found one hundred and twenty-one on the right, fifty-eight on the left, twenty-five double, and six whose seat could not be determined.

65. It has been stated that the upper pulmonary lobes were scarcely ever attacked with inflammation. We can state that they are inflamed often enough, less frequently, however, than the lower lobes. In fact, out of eighty-eight cases of pneumonia, we have found inflammation of the lower lobe forty-seven times, that of the upper lobe thirty times, and the entire lung inflamed eleven times†.

66. Pneumonia, considered with respect to its seat, presents a variety which it is important to notice, in consequence of the obscurity which its diagnosis often presents. In this variety the inflammation no longer occupies a greater or less extent of the lung continuously; but it is dispersed over a number of isolated points separated from each other by perfectly healthy tissue. These partial pneumonias occupy a space which varies from that which might be filled by a large orange, to that which a nut or a pea would occupy. When a lung thus partially inflamed is sliced, we observe on the surface of the cut portion a greater or less number of small red or grey patches, according to the stage of the inflammation, which form a striking contrast by their colour with the healthy tissue separating them. Where they do exist, there are observed also different degrees of hardness, softening, or consistence, according to the intensity and stage of the inflammation: sometimes there is observed but a small number of them, sometimes they are very numerous; and if we then conceive them to be all combined, we see that they occupy a considerable portion of the pulmonary parenchyma, that they are tantamount, for instance, to the inflammation of an entire lobe.

---

* Laennec questions whether gangrene of the lung is ever the result of inflammation; he considered this lesion as essential or idiopathic, like hospital gangrene, and as the cause rather than the effect of the inflammation. It is, however, admitted, that gangrene of the lung does sometimes succeed to inflammation of this organ, though it may also occur independently of it.—Trans.

† With respect to the portions of the lung most frequently attacked by pneumonia, the results of dissection and of clinical observation do not coincide. Hence Morgagni, Frank, and Broussais, who draw their conclusions from dissections, state that the upper lobes are most frequently the seat of inflammation, whilst Laennec and Andral, who included cases of recovery in the calculation, found the lower lobes to be most commonly inflamed. Dr. Williams, however, reconciles the discrepancy by assigning as the cause of it the fact, that inflammation of the upper lobes is the most frequently fatal.—Trans.

These partial pneumonias are found indifferently in all parts of the lung. However, with respect to diagnosis, we should particularly distinguish inflammation confined to the superficial layer of the pulmonary tissue, which is in contact with the ribs, to the anterior edge of the lung, to its diaphragmatic surface, to its root, and finally to its centre. We have already seen instances of these different forms. It is not uncommon to find, among these partial inflammations, the pulmonary tissue infiltrated with a great quantity of serum: this infiltration is easily distinguished from an inflammation, both by the nature of the liquid, which is colourless, and more particularly by the elasticity and consistence of the pulmonary tissue being still retained.

67. Inflammation of the bronchi uniformly accompanies inflammation of the pulmonary parenchyma. Their mucous membrane presents an intense redness, which is nearly equal in the great and small ramifications. When a single lobe is inflamed, the redness often exists only in the bronchi distributed to this lobe.

68. In the majority of cases traces of inflammation are found, such as greater or less injection, albuminous concretions, slight serous, purulent, or sanguineous effusion into the pleura corresponding to the affected lung; accordingly we have designated inflammation of the pulmonary parenchyma by the term pleuro-pneumonia. It must not be supposed, however, as was for a long time thought, that in every pneumonia there is also pleuritis: for on more than one occasion, after the most scrupulous examination, the pleura has been found healthy. Sometimes, too, though there was double pneumonia, we have found pleuritis only on one side. It is very uncommon to meet considerable effusions into the pleura on the same side as the pneumonia: it may be conceived that such an effusion would be impossible in the case where the entire lung should be hepatised. Once we saw the inferior part of one of the sides of the chest occupied by a vast effusion; it had compressed only the lower lobe of the lung towards the vertebral column; above it was bounded by the upper hepatised lobe, which adhered to the ribs, and formed in some measure the vault of the cavity filled by the effusion.

69. The right cavities of the heart are ordinarily distended by black coagulated blood. Unless in cases of complication, the other organs present nothing remarkable except venous congestion, which is carried to an extreme degree in the liver, spleen, and intestines, and is also variable, according as the last struggle is of greater or less duration, and according as the respiration has been more or less embarrassed.

70. We shall dwell very little on the occasional causes of pleuro-pneumonia; they are mentioned by all writers. In many cases they are very obscure, and their importance has been oftentimes exaggerated. Here too, as well as in the production of all other diseases, there must be admitted a predisposition, without which the occasional causes possess no influence. It is in virtue of this same predisposition that the same cause produces in one person angina, in another simple bronchitis, in a third a pleuro-pneumonia, in a fourth gastritis or peritonitis. Among persons who have been exposed to the action of a cold temperature whilst they were perspiring, the smallest number are affected with pneumonia. On the other hand, a pulmonary inflammation often manifests itself without our being able to refer it to any appreciable occasional cause*.

---

* "The influence of cold in producing inflammation of the lungs is sufficiently apparent in the much greater prevalence of the disease in cold seasons and cold climates. Of ninety-seven cases, recorded by Louis in Chomel's wards, at La Charité, during five years, eighty-one occurred between February and August, and only sixteen in the remaining five months of these years.............. Of two hundred and forty-three cases, which were treated at the Edinburgh New Town Dispensary, during three years, ending September 1, 1824, sixty-seven occurred from 1st September to 1st December; one hundred and four from 1st December to 1st March; ninety-four from 1st March to 1st June; and sixty-eight from 1st June to

Among the number of the occasional causes of pleuro-pneumonia, some have placed the suppression of certain acute exanthemata—namely, of small pox, measles, and scarlatina. I think that the effect has here been taken for the cause. In the cases where one of these exanthemata recedes and fades, is not well developed, or disappears prematurely, the most common cause should be referred to the existence of an internal inflammation, and particularly that of pleuro-pneumonia. The symptoms of this intercurrent inflammation are often very slightly marked; it readily escapes even attentive observation. The complication of small pox with a pleuro-pneumonia, a gastro-enteritis, or a meningo-cephalitis, certainly constitutes a great number of those bad cases of small pox called by the ancients *malignant.* The apparent freedom of breathing has inspired a fatal security in cases of this kind. Whether then the breathing be free or embarrassed, we should never neglect to percuss or auscultate the chest frequently at the onset, in the course, and at the termination of variola. How, without the employment of this double method, could we recognise in several small pox patients, among children particularly, a pneumonia which is not announced either by cough, dyspnœa, or expectoration, and which is masked under a group of dynamic or adynamic symptoms?

Pleuro-pneumonia may be sometimes the result of external violence on the thoracic parietes. This would constitute traumatic pleuro-pneumonia. Why, in fact, like the brain and liver, should not the lung become inflamed under the influence of this order of causes?

Among the number of predisposing causes of pleura-pneumonia, must be placed the existence of pulmonary tubercles. It rarely happens that phthisical patients are not several times affected with acute inflammation of the lung during their long illness. It seems to be occasioned by the habitual irritation which the presence of tubercles produces in the pulmonary parenchyma. It is, besides, a general rule for all organs where accidental tissues are developed. Thus the intestinal mucous membrane is inflamed and ulcerated above the tubercles formed between it and the subjacent membranes. Thus the brain is softened and disorganised around the different tumours which arise in its parenchyma. The frequent returns of pulmonary inflammation favour in their turn the development of tubercles, and thus become one of the frequent causes of the premature death of several phthisical patients. (See Cases 33 and 34.)

Cases of pleuro-pneumonia do not occur with equal frequency in all seasons. They are most common during spring. The months of March, April, and May are those in which we meet a greater number of them every year in the La Charité. We have constantly seen this class of diseases succeeded, during summer, by a great number of intestinal inflammations.

The result of our observation is that all ages are almost equally subject to inflammation of the pulmonary parenchyma. Children, in particular, are very frequently attacked with it. The pleuro-pneumonia of infants constitutes even an important variety of this disease. We shall presently speak of it at greater length.

71. The onset of pneumonia takes place in several ways. In the generality of cases, the patients are seized all at once, often without any obvious cause, with a shivering more or less violent and a pain in the side. The shivering ordinarily precedes the pain of side; at other times, however, the contrary takes place. In several patients no pleuritic pain marks the commencement of pneumonia; in

---

1st September. We have observed in London nearly an equal prevalence of the disease from the beginning of December to the end of April, and a considerably smaller proportion in the remaining months; but it appears generally that the latter winter and early spring months are most fertile in producing pneumonias in these climates."—Dr. Williams loc. cit.—Trans.

others there is not even a shivering, and the first symptoms are a cough of greater or less severity, with oppression and fever.

Pneumonia oftentimes imperceptibly succeeds a bronchitis. The inflammation then seems to extend by little and little from the large to the small bronchi, and ultimately to reach the pulmonary vesicles. In this case, sometimes the appearance of a pleuritic pain, the oppression, which suddenly increases, mark the existence of pneumonia; sometimes, on the contrary, the symptoms of catarrh usually take on greater intensity; one might then suppose that there was only super-acute bronchitis when the parenchyma was already attacked with inflammation. Thence the necessity of always having recourse to auscultation (for at this first period percussion is useless, the sputa are still those of catarrh), every time that a bronchitis is sufficiently acute to be accompanied with oppression and fever.

In some cases more infrequent than the preceding, we observe for some days the general state constituting inflammatory fever. This state is principally observed in plethoric persons, in whom it would seem that too rich or too abundant blood stimulates the organs too violently, and places them all in a manner on the verge of inflammation. Then the red injection of the external mucous surfaces of the conjunctiva, lips, and tongue, no more indicates the inflammation of the deep-seated mucous membranes than the redness of the face and rose-coloured tint of all the cutaneous system indicate genuine inflammation of the skin. In no part as yet is there a well-marked local inflammatory process; but everywhere there is a tendency to its production, and however short a time this state may last, we shall see, according to the predispositions and variable susceptibility of the organs, a gastritis arise in one, an arachnitis in another, a pneumonia in a third. In such case the attack is often not announced by any well-marked local symptoms; there is neither shivering nor pain of side, but some cough supervenes, and the breathing is hurried. This is the state designated by the ancients under the name of *peripneumonic fever*. When the pneumonia commences in this way, it may be very readily overlooked till the appearance of the sputa, for the cough is often slight, and such as exists in simple bronchitis; with respect to the dyspnœa, it often happens that patients do not complain of it, and the acceleration of the respiratory movements either may not be perceived at all, or else regarded as the simple result of hurried circulation. Thence the importance of scrupulously examining the organs; thence the necessity of auscultation.

Such are the different ways in which pneumonia commences when it is primary; but if it appear during the course of some other affection—if, for instance, it complicate either typhoid fever or another inflammation—if it supervene in an individual labouring under pulmonary phthisis, or aneurism of the heart, its commencement still presents some modifications important to be known.

In typhoid fever, pneumonia often marks its commencement by intense dyspnœa, but nothing can be inferred from this isolated sign, for in these diseases the respiration may be very much hurried, and become extremely embarrassed without pneumonia being present. The appearance of dyspnœa should then only awaken our attention, and urge us to ascertain the state of the lungs by auscultation and percussion. At other times, in these same fevers, the commencement of pneumonia is not marked by any perceptible modification of the respiratory phenomena, and the autopsy alone reveals the existence of pulmonary inflammation.

In many inflammations which, by their extreme acuteness, have thrown the patients into a false adynamia, the invasion of the pneumonia, far from being announced by greater or less reaction, is, on the contrary, only marked by a sudden and fatal prostration. The same phenomenon is again observed in several cases of chronic inflammations, which have thrown patients into the extreme stage of exhaustion and marasmus. Does a pneumonia supervene then? It is often not announced either by pain, dyspnœa, nor by cough, but we merely remark the rapid emaciation and the alteration of the countenance, as also the sudden premature increase of the general debility*.

In phthisical or aneurismatic patients, a greater dyspnœa ordinarily marks the onset of the pneumonia; but this dyspnœa may be fairly regarded as the result of a mere exasperation of the pre-existing affection; and as, in these patients, the signs furnished by percussion and auscultation often have no longer any value, it follows that in them the attack of a pneumonia may be very readily overlooked.

In fine, there are none of the cases which we have just considered, wherein auscultation, which might seem the surest mode to detect with certainty the period of the commencement of pneumonia, may not become insufficient; that is, when the inflammation commences to occupy the root or centre of the lung.

Nothing then is more variable than the commencement of pneumonia. What shades, what different forms in the attack, from that which is announced by shivering, pleuritic pain, dyspnœa, modification of the respiratory murmur, to that which is not marked by any characteristic sign, and which merely produces, according to the dispositions of the subject, one or other of those forms of disease constituting what is called *essential fever.* We should not forget those cases of perfectly latent pneumonia, which in their turn supervene in the midst of those same fevers, when the point of commencement of the latter has been the intestine or some other organ. What clinical experience is not required to recognise in the midst of so many different states, the existence of one and the same lesion! However, such knowledge is most important: how many pneumonias become fatal, because that being overlooked at their commencement, they are not then properly met!

72. After having marked the different modes in which pneumonia commences, we must now mark its symptoms.

This disease presents the following characteristic symptoms: pain more or less marked in one of the sides of the chest, dyspnœa, viscid and bloody sputa, dull sound, and modification of the respiratory murmur, febrile disturbance.

We shall first describe each of these symptoms in particular, then we shall point out how they commence, increase, and diminish, how they are grouped and connected together in the different periods of the disease.

73. Pain exists in pneumonia only when there is pleuritis at the same time, and that is the most usual case †. This pain is felt on the level of, or a little below, either breast; more rarely it is seated either below the clavicles, or entirely at the lower part of the ribs, and even in the hypochondria, or, in fine, over all the extent of the thoracic parietes of one side. Variable in intensity, it is at the commencement of the disease that it is most acute; it then gradually diminishes, and ordinarily ceases to exist a long time before the termination of the pneumonia; it sometimes survives the latter; in some cases we see it disappear and return several times. In some patients it precedes by several days the appearance of the other symptoms: being then accompanied neither with fever, cough, nor dyspnœa, it simulates a pleurodynia, or simple rheumatic pain. It is increased by coughing, by the movements of inspiration, sudden changes of position, and intercostal pressure and percussion: it is principally exasperated by lying on the side in which it exists. In all the patients who have presented this pain to us, we found the pleura inflamed, and covered with membraniform albuminous exudations. On the contrary,

---

* It is principally in old people that pneumonia, with or without characteristic sputa, often gives rise to that group of symptoms which constitute the adynamic fever of Pinel, without there being any gastro-enterite.

† Laennec asserts on the contrary, that there is frequently very acute pain, when there is no pleuritic inflammation at all. Dr. Williams coincides with him in this opinion.—Trans.

we have uniformly seen the absence of the pain coincide with the healthy state of the pleura; but here the converse cannot be asserted, and we often find the pleura inflamed in persons in whom no pleuritic pain has been observed. When this membrane is not inflamed, the patients experience, in the affected side, merely a sense of embarrassment and uneasiness, a sort of more or less painful weight, an annoying and deep-seated sense of heat, but never a real pain. Thus the ancients said, with much justice, when speaking of pneumonia: *affert plus periculi quam doloris*. We shall have occasion to recur again to the pleuritic pain, when speaking of the inflammation of the pleura.

74. The dyspnœa, in pneumonia, is generally in the direct ratio of the extent of the inflammation, of its seat, and of its intensity in each of the points which it occupies. However, this rule is liable to numerous exceptions. In consequence of unaccountable idiosyncrasy, there are some individuals, a very small portion of whose lung is in the first stage of inflammation, and whose breathing, nevertheless, is very much embarrassed. There are others, in whom a much greater portion of the lung is inflamed in the second or third stage, and who still feel much less dyspnœa. The greater or less embarrassment of the breathing is not then always a faithful index of the extent of the pneumonia and of its degree. It appears, cæteris paribus, that inflammation of the upper lobes gives rise to greater dyspnœa than an equally extensive and equally advanced inflammation of the lower lobes.

Moreover, we should be particularly cautious not to depend too much on what patients say regarding the greater or less embarrassment in their breathing. It is a very remarkable thing to hear a great number of these patients assert that they feel no oppression, though their breathing may be evidently short and hurried.

The dyspnœa of pneumonia presents several degrees. When it is not very considerable, patients are not aware of it; they speak with ease and freedom: some attention too is required to perceive that the inspiratory movements are shorter, more hurried than in the natural state; it is principally the stronger elevation of the ribs which reveals this slight degree of dyspnœa. In this degree, patients may change position, lie on their back or side, sit up in their bed without feeling annoyance, or perceptibly increasing the difficulty of their breathing. In a greater degree, the patient may still not feel any oppression; but the inspiratory movements are short and frequent; the breathing is performed at once by a considerable elevation of the ribs, and a marked depression of the diaphragm; deep inspirations are impossible: speech is interrupted and panting; sudden movements in the bed, and particularly the action of sitting up, singularly increase the difficulty of breathing; the patient then is oppressed. In a still higher degree, the oppression is as much felt in the state of rest as in motion. Patients often complain of having on their chest, as it were, a weight which smothers them; when we observe them, it seems that, strangers to every surrounding object, they are entirely occupied with respiring; the face of a violet red, or livid pale colour, expresses intense anxiety; the nostrils are dilated strongly; the respiratory movements are very frequent and very short, as if the air could not penetrate beyond the first divisions of the bronchi. The patients can scarcely speak, whilst they are panting and as it were out of breath. When the difficulty of breathing is carried to such a pitch, the termination is seldom favourable: we have, however, some instances of it.

It sometimes happens that the side of the chest where the pneumonia exists remains entirely immoveable amidst the violent efforts which the patient makes to breathe. But this phenomenon, of rare occurrence in pneumonia, is more frequently observed in the case of pleuritic effusion.

After most of the symptoms of pneumonia have ceased, the breathing often remains still embarrassed for some time. This dyspnœa is not perceptible as long as the patient remains at rest; but it reappears the moment the patient attempts to rise and walk. As long as this residue of dyspnœa continues, we must suppose that the resolution of the pneumonia is not yet complete.

75. At the same time that the pain appears and the dyspnœa manifests itself, the ear applied to the thoracic parietes, recognises a perceptible modification in the natural murmur which is heard at each inspiratory movement; according as the pneumonia progresses, this murmur undergoes new modifications, which point out with greater or less precision the seat and degree of the pulmonary inflammation. The voice is equally modified.

If we auscultate the chest from the very onset of the pneumonia, this is what we observe in the majority of cases. On the side where the pain is manifested, the natural respiratory murmur has lost its clearness; it is mixed to a greater or less extent with a dry râle, designated by Laennec *the crepitous râle*, in consequence of the resemblance between the sound it produces and the sound which is heard when a salt decrepitates on burning coals. Oftentimes also it has a still more perfect analogy with the particular sound produced by rubbing a bit of parchment.

During the first moments of the existence of this râle, it alters and obscures the natural murmur of respiration, but it does not entirely mask it. According as the inflammation advances, it becomes more and more marked, and finally conceals altogether the inspiratory souffle.

The crepitous râle indicates engorgement of the lung; whilst it exists, it is a proof that, in several points at least, the pneumonia has not passed the first stage. But from its greater or less intensity, from its greater or less mixture with the natural murmur of respiration, we may deduce signs regarding the more or less advanced state of the first degree, regarding even the union of the first with the second degree. As long as the natural respiratory murmur predominates over the crepitous râle, we should infer that the inflammation is slight. If the crepitous râle becomes in its turn predominant, if ultimately it altogether masks the respiratory murmur, it is a certain index that the pneumonia has made progress, that it has a tendency to pass to the second degree. When the patients die whilst they present the crepitous râle in this degree, we generally find the lung simply engorged, though it be still pervious, its tissue is now softened and friable; it admits of being torn with considerable ease. At a later period still, the crepitous râle ceases to be heard; but then two cases may present themselves: either at the same time that the crepitous râle diminishes, the natural murmur of respiration is heard anew, or this murmur does not return, and at the same time sometimes nothing is heard; sometimes this murmur is succeeded by another, which we shall speak of presently. In the first case, we must admit that the pneumonia progresses towards resolution; in the second case we attain the certainty that the disease becomes more severe, and that the lung is being hepatised.

The dry crepitous râle, such as we have described, does not always present itself with such marked characters. In several cases it is more moist, and approaches by imperceptible shades to another species of râle, which results solely from a mixture of air and liquid in the large bronchi (the mucous râle of Laennec). On the other hand, we often hear a râle entirely similar to the crepitous râle in persons who are affected only with an intense bronchitis, and in whom there is found after death neither pneumonia nor pulmonary œdema. What then is the crepitous râle? what is its seat? how is it produced? It is very evident that in the last mentioned individuals, it can only result, as the mucous râle, from a mixture of air and liquid in the bronchi. If we then reflect that these two râles present a number of degrees and shades where they are confounded, we shall conclude that they are produced by the same cause, that is, by the murmur occasioned by the passage of the air through the different liquids which may fill the air tubes. Always reasoning from analogy, and considering that the mucous râle in its turn is often confounded with the gurgling of cavities, we shall conclude that these different murmurs, owing to one and the same cause, present no especial difference, except in reference to the size of the cavity where they take place. Thus, the gurgling is heard in very large cavities, the mucous râle in the large bronchi, the crepitous râle, which approximates to the mucous râle, in the smaller bronchi; in fine, the crepitous râle, characteristic of pneumonia, in the finer bronchi, and particularly in the pulmonary vesicles. These three varieties of one and the same murmur might be designated by the names, *cavernous râle*, *bronchial râle*, and *vesicular râle* *.

The crepitous râle, announcing the first degree of pneumonia, was pointed out by Laennec, who has also very correctly stated, that when hepatisation of the lung has succeeded engorgement, the ear, applied to the chest, perceives the thoracic parietes rise at each inspiration, but no longer perceives any murmur, whether natural or pathological. We have now verified the accuracy of these assertions. But at the same period of the pneumonia, there is often observed another very remarkable phenomenon, which does not seem to us to have engaged so much the attention of Laennec †. In several patients whose lungs are in the state of red or grey hepatisation, the respiratory murmur does not disappear; but it is singularly modified, and it is clearly no longer the same kind of murmur that is heard. One would then say that an individual placed near the ear of the person who listens blows into a tube. Thence the name of *tubary souffle*, by which this modification of the respiratory murmur has been designated. At other times, on the side where the sound is dull, the normal respiratory murmur is heard, without the admixture of any râle; it is only of greater intensity than on the healthy side, so that if one were not apprised of the possibility of such a mistake, the lung which is diseased, and into the substance of which the air no longer enters, would naturally be regarded as the healthy lung. At the same time the voice is modified in its resonance. This modification of the voice is not properly that of œgophony, nor pectoriloquy; it approaches more to the modification which the voice undergoes in the case of dilatation of the bronchi (bronchophony). Every time that patients have died who presented these modifications of the respiratory murmur, and of the voice, we have invariably found either red or grey hepatisation of the lung, or, as we shall see presently, a pleuritic effusion. We have not observed them during life, except in cases where the very dull sound and aggregate of the other symptoms announced a pneumonia in the second or third degree, or else an effusion into the pleura.

Such a modification of the respiratory murmur and voice seems to us to admit of an easy explanation. It appears to us to depend on the circumstance of the air not being able to penetrate beyond the large bronchial tubes. Thus it is not only manifested in the case of pulmonary hepatisation; it is also observed in the case where a pleuritic effusion compresses the tissue of the lung; every time, in fact, that the air cannot reach as far as the pulmonary vesicles. The cause of this peculiar respiratory murmur being determined, we shall call it the *bronchial respiration*, in contradistinction to the natural respiratory murmur, which we shall designate the *murmur of pulmonary expansion, vesicular respiration.*

When the pneumonia proceeds towards resolution, and begins to repass from the second to the first stage, some crepitous râle is again heard. At the same time the bronchial râle becomes less and less perceptible, the peculiar resonance of the voice also ceases by little and little; the crepitous râle ceases in its turn, and is succeeded in its turn by the clear murmur of pulmonary expansion. Oftentimes the crepitous râle continues in some points, and even over a considerable extent of the lung, a long time after the cessation of all the other pneumonic symptoms, and the disappearance of all fever. Without auscultation one would suppose the pneumonia entirely resolved, the slight cough which still exists would not seem to merit serious attention, and yet, as long as this râle exists, we may be certain that the resolution of the pneumonia is not complete, and we should apprehend either a relapse and return of the disease to the acute state, or the continuance of a nucleus of latent inflammation from which disorganisation of the lung may sooner or later result.

---

* The qualities of the liquid expectorated, and particularly the different degrees of viscidity must still modify the râle very considerably.

† This was written before Laennec published his second edition.

As we often find, after death, the three degrees of pneumonia united in one and the same lung, so we often observe in one and the same individual, at the same period, the different auscultatory signs which indicate the simultaneous existence of these different degrees. Thus, in one point we hear some crepitous râle alone, or mixed with the murmur of pulmonary expansion ; in another point we hear the bronchial respiration ; in other parts, again, we perceive neither râle, nor respiratory murmur, nor resonance of the voice.

At the same time that auscultation gives on the affected side the different signs just mentioned, the murmur of pulmonary expansion is heard on the healthy side with much greater intensity than what is heard in the physiological state, as if, in order to supply the place of the affected lung, the lung which has remained healthy should receive in a given time a greater quantity of air. This unusual intensity of the respiratory murmur on one single side should of itself suffice to excite suspicion of some lesion in the other lung.

It sometimes happens that the great quantity of liquid accumulated in the bronchi occasions a bronchial râle so loud, that it masks all the other sounds, and the state of the pulmonary parenchyma can no longer be known by auscultation.

Finally, there are cases, where, though there may be pneumonia, auscultation learns nothing regarding its seat and degree. The ear applied to the chest hears every where the murmur of pulmonary expansion very distinct, but at the same time much louder than in the natural state. This happens when it occupies but a circumscribed portion of the lung, remote from its surface, and particularly a portion of its base, centre or root. We may also perceive how little information auscultation must supply when the inflammation exists only in some isolated lobules. (Case 21.)

Thus we have met three cases in which the pneumonia produces a respiratory murmur louder than usual. In the first of these cases, it is in the same part of the lung where a very dull sound exists, that this increase of the normal murmur of pulmonary expansion is heard. In the second case, it is still on the side of the affected lung that it is heard, but only in the healthy portions of the pulmonary parenchyma situated around the affected part. Finally, in the third case, it is only on the side of the healthy lung, that the respiratory murmur presents unusual strength.

76. We shall not dwell on the generally recognised advantages of percussion of the chest for the purpose of distinguishing the seat and intensity of the pneumonia. Before auscultation was employed, percussion alone could detect a great number of pneumonias more or less latent : at present, far from giving to one of these two methods an exclusive preference, we should always employ them simultaneously, and endeavour to confirm the results afforded by the one by the results of the other.

With regard to their respective degree of utility, it is certain that auscultation goes farther than percussion. There are a great number of pneumonias in the first degree during the course of which no diminution is observed in the sonorousness of the thoracic parietes ; auscultation, on the contrary, affords in this case very valuable information. In all pneumonias the sound becomes obscured only towards the second or third day, sometimes not till a later period ; here again, auscultation gets the start of percussion, and from the very onset it announces the seat of the inflammation. Finally, at the period of the termination of the pneumonia, when the dulness of sound has disappeared, and percussion no longer indicates any morbid state, auscultation often furnishes signs which indicate that the resolution of the pneumonia is not yet complete.

There are cases also, where, as well as auscultation, percussion no longer affords any information, in consequence of the deep seat of the pneumonia, particularly when the latter exists towards the base, the centre, or the root of the lung.

Percussion, as we have already observed, cannot be employed when the thoracic parietes are painful, where they are infiltrated, or when they are covered with a blister. In these different cases auscultation supplies it with advantage. The same thing happens also with persons whose chest is more or less deformed.

In several cases of double pneumonia, there is an equal dulness of sound on both sides; and if this dulness is inconsiderable, it may be considered as a natural state. Who does not know, in fact, that the chest is far from having equal sonorousness in all individuals, and that very often in persons otherwise in good health, it yields but a very obscure sound? Auscultation does not expose one to such an error.

When we employ percussion, we should never forget that the liver on the right, and the spleen on the left, occasion a dull sound, which is constant for the first of these viscera, and more common than is supposed for the second.

77. The cough does not present any notable character; it seldom occurs by fits; its intensity and frequency are not always proportioned to the acute nature of the inflammation. At the onset it is dry; but it is soon accompanied by a peculiar expectoration, which must be considered as one of the surest signs of pneumonia.

78. Transparent and red sputa, combining into a gelatinous and trembling mass, so viscid that the vessel which contains them may be turned upside down without their being detached from its sides, such are the prominent traits which do not permit us to confound the expectoration of pneumonia with any other. But how insufficient is not this concise description? The sputa, in fact, are far from presenting this appearance in the different degrees of inflammation of the lung: there are cases where they assume an entirely different disposition; at other times, the pneumonia runs through its different stages without its existence having been in any way announced by the expectoration, which has been all through, either absent, or devoid of character.

We shall first set about describing the expectoration, such as it most frequently presents itself during the course of a pneumonia.

At the onset of the disease, where there is already observed some cough and some dyspnœa, a marked febrile disturbance, and a pain more or less acute, the patient does not yet spit, or else he expectorates merely a little guttural or bronchial mucus mixed with saliva. Then in the majority of cases, the chest when percussed still yields a clear sound; but already a commencing râle is heard in one of the sides of the chest; according as this râle becomes more marked, the expectoration begins to become characteristic: this usually happens from the second to the third day. The sputa become *bloody*, that is, they consist of a mucus intimately united and combined with blood; it is not merely simple striæ of blood, as in the sputa of catarrh; neither is it pure blood, as in hemoptysis. According to the quantity of blood which they contain, the sputa are either yellow, or of an iron red colour, or of a marked red. They become at the same time tenacious and viscid; they adhere together so as to form one transparent and homogeneous whole; but however little we incline the vessel containing them, they are still observed to flow from it with considerable ease. Thus, at this period of the disease, the sputa adhere firmly to each other, but they are not yet sufficiently viscid to adhere to the sides of the vessel.

Oftentimes, during the entire course of the pneumonia, the sputa are observed to be such as we have now described them : in this case, the inflammation of the lung does not ordinarily pass the first stage ; but frequently too the sputa acquire still greater viscidity ; they are no longer detached from the vessel, when it is turned upside down. There should be then cause to apprehend lest the inflammation may be advancing and the pneumonia may reach the second stage. Almost always in fact, at the same time that the sputa becomes more viscid, the chest when percussed yields a duller sound, and the murmur of pulmonary expansion is either gone altogether, or is changed into bronchial respiration.

The pneumonia has then attained its most acute form. The sputa remain for some time stationary, then they present themselves with new characters, which differ according as the disease is to terminate in resolution, to prove fatal, or to pass to the chronic state.

When the pneumonia proceeds towards resolution, the quantity of blood contained in the sputa begins to diminish as well as their viscidity. First, the vessel containing them must be shaken with considerable force in order to detach them from it; at a somewhat later period, it is sufficient to incline it a little; they gradually resume the characters which they had in the first stage of the disease, and finally, they once more become those of simple acute catarrh.

We often see patients whose sputa, after having been less viscid and less bloody, reassume from one day to another their original viscidity and deeply reddened colour. That is a certain sign that there is a return of the intensity of the disease, as is proved also by the simultaneous exacerbation of the other symptoms.

Is the resolution of pneumonia particularly favoured, as Cullen said, by the expectoration of a thick, white, or yellowish matter, marked with some filaments of blood, which is excreted in great quantity, without exciting a violent cough? Observation has satisfied us that such an expectoration is by no means necessary to the complete resolution of the disease, and that the latter may terminate very favourably, though the sputa which have lost their viscidity, and which are no longer tinged with blood, remain watery, transparent, colourless, and cease at last to be expectorated without having acquired a greater degree of *coction*, as the ancients used to say.

We should, however, commit a serious error if, after merely inspecting the sputa which have returned to a purely catarrhal state, we should suppose that the pneumonia was perfectly resolved. It often happens, in fact, that the nature of the expectoration seems to announce that complete resolution has taken place; and yet auscultation still detects some crepitous râle. The latter continues with many patients for a longer or shorter time, after the sputa have ceased to be characteristic.

It is more uncommon to see the pneumonic expectoration continue to appear, when the cessation, or at least the obvious amendment of the other symptoms already seems to announce an almost complete resolution of the inflammation; we shall, however, cite a remarkable instance of it.

A man, fifty-nine years of age, was attacked with a pleuro-pneumonia of the left side. On the third day the sputa were reddened and viscid; the same expectoration on the following days. General and profuse sweat on the seventh. On the eighth an amendment of all the symptoms; continuance of the expectoration. On the tenth day the crepitous râle, which was heard since the commencement of the disease, over all the posterior left side of the chest, was succeeded by the natural respiratory murmur; the dyspnœa no longer existed, skin not hot, pulse scarcely feverish, and still the sputa retain the appearance which they presented since the third day of the disease. They are transparent, deeply reddened, combined into a jelly-like mass, not, however, adhering much to the vessel, such as they are observed in the transition from the first to the second stage of pneumonia, or in the return from the second stage to the first. On the following days, the patient seemed completely convalescent. The expectoration, nevertheless, retains the same character, and becomes not decidedly catarrhal till eight or nine days after the disappearance of all the other symptoms of the pulmonary inflammation.

It is probable that, in this case, a central point of the parenchyma had continued affected with a residue of inflammation, which was indicated solely by the expectoration.

When the pneumonia, instead of being resolved, becomes more and more intense, or has a tendency to terminate in suppuration, the expectoration presents new characters which it is important to know.

In the majority of cases the expectoration becomes at first difficult and scanty, then is suppressed altogether. But in some, and that is the most ordinary case, the secretion of the matter of the sputa continues to go on; their excretion alone is impossible, either on account of their great viscidity, or by reason of the debility of the patient. They accumulate in the bronchi, trachea, and larynx, obstruct the passages, and death by asphyxia is the frequent result.

In other patients, the secretion of the matter of the sputa ceases in a manner more or less abrupt. The state of the bronchial mucous membrane may then be compared to that of an ulcer, whose surface, after having been the seat of a profuse suppuration, becomes dried up all at once.

The numerous diseases which so often complicate inflammation of the lung, are one of the frequent causes which diminish or suspend the secretion of which the mucous membrane of the bronchi is the seat. Purgatives given in great quantity at the commencement of the disease, also produce, according to Baglivi, the suppression of the expectoration. Morgagni considers unseasonable bleedings, particularly when employed in the case of aged persons, as calculated to produce the same effect. He says on this subject—*Sunt plures medici qui ægros ob id interimunt, quia nesciunt ipsi quiescere.* Sydenham also states, that blood-letting too often repeated suppresses the expectoration, whilst, if employed with more caution, it often serves to re-establish it. In the eyes of the physician who, faithful to those principles, has recourse to venesection with prudent discernment, the taking of a certain quantity of blood is often the best expectorant: *Optimum in pulmonum inflammationibus expectorans remedium venæsectio prudenter administrata habenda est.*—(FRANK.)

When it was believed that pneumonia, caused by morbific matter settled on the lung, could not be resolved but by means of this matter being evacuated by the sputa, persons supposed, as soon as they saw the sputa suppressed, that the morbific matter remained in the lung, the destruction of which it gradually effected, unless that by means of a happy metastasis it was discharged from the system with the stools, urine, or sweat. Such are the ideas which reigned for a long time in the schools, but which are now no longer admitted, because the existence of this morbific matter is not proved by any fact, and the danger of suppressing the sputa is very easily explained without admitting it. Let the inflammation of the pulmonary parenchyma be exasperated under the influence of any cause whatever, the simultaneous inflammation, with which the bronchial mucous membrane is affected, is sympathetically increased; and, as in all inflammations of mucous membranes carried to a very high degree, all secretion is suspended in it. The exacerbation of the inflammation then causes both the severe symptoms which appear, and the suppression of the expectoration.

We, however, see some patients labouring under pneumonia in the most intense degree, suddenly cease to expectorate, without any serious mischief immediately occurring. (See case 23.) In such case we must have regard to the aggregate of the other symptoms, and be cautious of giving any prognosis whatever, from the mere circumstance of the suppression of the sputa.

In other patients labouring under a fatal attack of the disease, the sputa are not suppressed, they only change their appearance. Several of these patients expectorate in small quantity, during the last twenty-four hours of their life, some opaque sputa of a dirty reddish grey colour; there is the greatest resemblance between this species of sputa, and those often expectorated by phthisical patients a little before death.

Finally, in some rare cases, the expectoration continues to appear up to the last moment of life, in the same abundance and the same characters as if the inflammation was to terminate in resolution. We saw a striking instance of it in an old man who was brought to the La Charité, presenting all the symptoms of very intense pneumonia. He died on the seventh day. During all the time of his stay in the hospital, his sputa were transparent, combined in a jelly-like mass, adhering strongly to the vessel, and remarkable for their saffron colour. Two hours before death, he still expectorated a great quantity of these sputa. We found the left lung in a state of red hepatisation, from its summit to its base: the bronchi, examined in their large trunks, and as far as their smallest ramifications, were intensely red.

Is the termination of pneumonia by suppuration announced by a peculiar expectoration? Authors have said nothing on this subject. Among the individuals who died of acute inflammation, in whom we found the lung in a state of grey hepatisation, some ceased to expectorate in the latter period of their illness; others expectorated greyish, inodorous sputa, flowing together in one mass, and truly purulent; in others the expectoration remained such as it appears in the case of red hepatisation. Finally, in a certain number of patients, we have seen the sputa in this third stage lose their jelly-like appearance, their great viscidity aud their reddened appearance, and to consist thenceforth merely of a liquid having the consistence of gum water, of a more or less deep brownish red, sometimes even altogether black, bearing a considerable resemblance to liquorice-juice, or prune-juice. Oftentimes the mere presence of this kind of expectoration has induced us to announce the existence of the third degree of pneumonia, and the autopsy almost always justified our diagnosis. (See cases 13, 14, 15, 16.)

However, we must not consider this kind of sign as infallible, the most general rules have their exceptions, and sometimes we have observed the prune-juice sputa just described, in individuals whose lungs were only in the state of red hepatisation (Cases 24, 25); we have even met them in a case where the pneumonia, being rather slight, did not appear to have passed the first stage, and had a favourable termination. (Case 26.)

When the pneumonia terminates in gangrene, this termination is announced by the expectoration of a liquid at first greenish, then a dirty grey colour, reddish at intervals, exhaling a fetid odour, like that of the gangrene of external parts. (Cases 42, 43.)

It would still remain for us to speak of the expectoration in the case where the acute pneumonia passes to the chronic state, or in the case of primary chronic pneumonia, but then the sputa present no peculiar character; they are those of pulmonary catarrh, of which they may assume all the shades. Should it happen that the symptoms of chronic pneumonia become exasperated, so that the disease repasses to the acute state, this change is announced by the nature of the expectoration, which reassumes its viscidity, transparence, and red colour.

When a pneumonia complicates an affection of the lung already of long standing, the sputa present variable characters which it is important to know. Sometimes the expectoration which belonged to the previous affection of the lung, such as chronic bronchitis, or tubercles, entirely disappears, and is succeeded by the expectoration which announces inflammation of the pulmonary parenchyma, but often, also, there is observed a mixture of both; their characters are mutually masked, and we can no longer draw any inference from them with respect to the diagnosis or prognosis of the disease. At other times, after the sputa which belong to the pneumonia have appeared alone for a long time, we see the former expectoration reappear towards the decline of the inflammation. Thence a new source of error. One might consider, for instance, as still appertaining to the pneumonia, and even as affecting its crisis, white and opaque sputa, which are altogether foreign to it, and which depend on an old bronchial affection, which, suspended or modified by the pneumonia, returns to its former state the moment the parenchymatous inflammation begins to resolve.

The preceding considerations prove sufficiently how important the attentive study of the nature of the expectoration is in pneumonia, and how it assists in establishing its diagnosis. However, it is not to be supposed that all pneumonias are accompanied by a characteristic expectoration; there are pneumonias, slight or severe, which run through their different periods, and terminate, some in health, others in death, and which never presented anything but the sputa of simple bronchitis. (Cases 27, 28, 29, 30.) The complete absence of characteristic expectoration is observed particularly in the cases of intercurrent pneumonias. (Case 40.)

Shall we mention here that the absence of all expectoration during the course of a pneumonia has been considered as dangerous an omen as its suppression? Thus Cullen thought that it rarely happened that a pneumonia without expectoration terminated in resolution. Frank, whilst he considers with Cullen the absence of the sputa as a very bad symptom in pneumonia, avows, however, that he has seen a considerable number of patients recover perfectly, though they never had expectoration to any amount; but he says that he observed in them a sediment deposited from the urine, and very copious sweats, which, according to him, advantageously supplied the evacuation which should have taken place by the sputa. We have not observed any thing of the kind.

Does the colour of the sputa of pneumonia depend uniformly on the presence of blood? are they not also frequently coloured with bile? We are far from wishing to deny the latter cause of colour. We have given a case of it (Case 38); but we consider it as more rare than is generally thought, and we think we may generally attribute the varied colour of the sputa to the variable quantity of blood which they contain. If, in fact, we mix with pure water, rendered viscid by means of mucilage, a little blood, the proportion of which is gradually increased, we see it successively become tinged with a deeper and deeper yellow, then with a greenish yellow, then with a yellow which is confounded with red, whence the iron-red colour, then, in fine, with an intense red. We also find in the serum of the blood, separated from the crassamentum, the different shades of yellow, green, and red, according to the greater or less colouring matter it has retained. The pneumonic sputa are very generally yellow at the onset of the disease; they then acquire a well-marked red tint; then, according as the inflammation lessens, they are observed again to become yellow or greenish. Will it be admitted that the bile and blood mutually succeed each other, whilst the alternating change of colour is very naturally accounted for by considering it as owing to the variable quantity of blood contained in the expectoration?

79. The different functions of organic and animal life undergo, in acute pneumonia, greater or less disturbance.

At the commencement of the disease the face is ordinarily red; but we have not observed, as has been frequently stated, that the cheek of the side of the lung affected was redder than the other. Anatomy also refutes such an idea. The higher colour of the cheek of the affected side is manifested only when the patient has lain for some time on this side, and then the greater redness of the cheek should be considered as a purely mechanical phenomenon. The redness of the cheeks continues as long as there is a strong reaction. If the dyspnœa becomes considerable, the countenance presents a livid tint, which increases with the difficulty of the respiration. When the lung begins to be infiltrated with pus, a characteristic paleness, a tint sometimes similar to that of cancerous affections, is usually diffused over the entire face. This appearance of the face is often so well marked, that it has served us, in some cases, more than any other sign, to diagnose the third stage of pneumonia.

80. Delirium manifests itself rather frequently during the course of pneumonia. Sometimes appearing only at intervals, and particularly during the night, it is a symptom not at all important. Sometimes, on the contrary, it is continued, and is accompanied by other nervous phenomena. In this case it may be produced by a real meningitis; but most frequently no other lesion is found than a certain quantity of limpid serum effused into the ventricles, and particularly at the base of the cranium. The delirium, owing to this cause, manifests itself principally when the respiration is very much embarrassed; it seems that here, as in aneurismatic patients, as in all cases where there is a commencement of asphyxia, the serous cerebral effusion arises from the purely mechanical difficulty experienced by the venous blood in its return from the encephalon to the lungs through the right side of the heart, which is gorged, and as it were obstructed with blood. At other times again, we find no appreciable lesion either in the encephalon or its appendages to account for the delirium of pneumonias.

81. The mode of lying down in pneumonia has this long time engaged the attention of practitioners; constant decubitus on the affected side has been given as one of the characteristic signs of inflammation of the lung. Now nothing is less true. At the onset of pneumonia, as in its course, there is scarcely one patient in fifteen who lies in this way; all the rest constantly lie on the back. It is not in pneumonia, but in certain pleuritic effusions, that this decubitus on the affected side is observed, as we shall prove another time.

82. The state of the pulse is very variable; its most usual character is that of being frequent and large. When the inflammation is very intense, it is sometimes remarkably small; this smallness disappears after copious blood-letting. In other patients there exists a real weakness of the pulse, which is increased by bleeding. As much as numerous bleedings are useful in the first stage, in the same way would they be injurious in the second. The sudden suppression of the sputa, the increase of the dyspnœa, a prostration rapidly fatal, have been more than once the result of these unreasonable bleedings. It is then that active revulsives should be employed. It is often very difficult to establish, *a priori*, and from the mere consideration of the symptoms, the distinction between the pulse which is really weak, and that which is only apparently so. The effects of bleeding may assist considerably in establishing this distinction.

Sometimes, on the contrary, after copious bleedings, and when every thing announces that the inflammation is lessening, the pulse loses nothing of its strength and hardness; but in that case very often, and this is observable in old people particularly, the hardness of the pulse does not indicate the severity of the inflammation or the strength of general reaction; it is connected with hypertrophy of the heart, confined to the left ventricle, the parietes of which are thickened at the expense of the cavity. It is easily seen how important the knowledge of such a circumstance is with respect to treatment.

It rarely happens that the pulse presents an intermission or well-marked irregularity, even in the most alarming cases, unless there be a complication of organic lesion of the heart.

Great frequency of the pulse announces danger in this disease. It seldom happens that recovery takes place when the pulse exceeds one hundred and thirty. The frequency of the arterial pulsations is always in a direct ratio with the frequency of the inspiratory movements; however, in the last periods of life it is often observed that the pulse loses its frequency and seems to have returned to its natural state, though the respiration becomes more and more accelerated. This is invariably a fatal sign.

When the different rational symptoms of pneumonia have disappeared, when there is no longer either dyspnœa, expectoration, cough, nor fever, properly so called, it sometimes happens that the pulse remains more frequent than in its natural state. This unusual frequency, without there being at the same time either a rising of the pulse, or heat of the skin, should not be overlooked ; it should excite apprehension that a residue of the inflammatory process still exists in the lungs, and auscultation generally affords a certainty of it. At other times, on the contrary, in consequence, no doubt, of the different activity of sympathies in different individuals, the circulation ceases to be disturbed when there is still a little dyspnœa and cough, and when auscultation announces that the inflammation is not yet completely resolved.

83. One of the most constant phenomena observed in pneumonia, is the buffed state of the blood. We have carefully noted, in most of the cases, the differences presented by the buffy coat with respect to its consistence, thickness, colour, and form. We have been able to see in some cases the evident relation which existed between the presence of this coat, and the existence of the pulmonary inflammation at the time. Accordingly, some persons were bled before they had as yet presented any sign of pneumonia, or after the cessation of the latter. Their blood was not then coated. These same persons were also bled during the course of the pneumonia, and then their blood was coated.

84. The digestive functions, except in cases of complication, have not presented any phenomenon worthy of notice, except whiteness of the tongue, anorexia, and some thirst. These phenomena are observed in the most serious diseases, as well as in the slightest ; they demonstrate the close connexions which unite the digestive functions to those of the other functions.

We should here treat of the state of the different secreted fluids, and particularly of the sweat and urine. We shall reserve that matter for another opportunity.

85. We have now passed in review the different symptoms of pneumonia ; but in order to appreciate them the better, we have considered them separately ; let us now observe how they appear, combine, and succeed each other in the different phases of the disease. We shall first state the most common cases, and then note the exceptions.

Pain is ordinarily the first symptom which appears, preceded or not by shivering ; at the same time the respiration is embarrassed, the patient coughs without expectorating ; auscultation, employed from this first period, most frequently detects a little crepitous râle, which is not yet loud enough entirely to mask the respiratory murmur. The chest, when percussed, still sounds well ; there is a more or less marked febrile disturbance. This group of symptoms constitutes the first period of the disease. From the second to the third day new symptoms appear ; the expectoration, till then either none or purely catarrhal, becomes characteristic ; it is at first but slightly viscid, and differently coloured, according to the variable quantity of the blood which it contains. The crepitous râle, now more intense, masks still more the respiratory murmur ; the sonorousness of the thoracic parietes begins to become less on the side where the crepitous râle and pain are found to exist ; the latter is usually less acute than at the commencement. The dyspnœa increases ; it is easily recognised by the short frequent inspirations made by the patient, though very often he positively asserts that he feels no oppression. If the pain is acute, decubitus on the affected side is impossible ; neither does the patient lie on the healthy side, because he then breathes with more difficulty ; he almost always lies on his back. The fever continues with numberless shades with respect to the characters of the pulse, temperature of the skin, its degree of humidity or dryness.

In this state, the pneumonia, having now attained a considerably acute form, is still, however, only in the first stage. Often then it remains stationary for a longer or shorter time, then it retrogrades ; the dyspnœa diminishes ; the slight dulness of sound disappears; the crepitous râle is gradually succeeded by the natural respiratory murmur; the sputa again become those of simple bronchitis; the febrile disturbance is at first less intense, and then it ceases altogether.

At other times, instead of retrograding towards resolution, the pneumonia becomes more severe, though it has not yet passed the first stage. This increase in severity is the result, either of the propagation of the inflammatory engorgement to a greater extent of the pulmonary parenchyma, or else of an inexplicable idiosyncrasy; the dyspnœa goes on increasing, and death may supervene, the pneumonia not yet having passed beyond the first stage.

In the majority of cases, however, this is not so. If the inflammatory engorgement is not resolved, if the symptoms announcing it become more severe, there is then reason to dread the invasion of the second stage. We may be certain of the existence of this latter, when the following phenomena are observed. The breathing becomes more and more embarrassed, short, and hurried; the power of speaking is interfered with; the patient can then only pronounce some half-broken words with a panting voice. The sputa become so viscid that they can no longer be detached from the vessel. The sound of the chest, on the side affected, is decidedly dull; at first there is still heard a little crepitous râle, without the mixture of any respiratory murmur; then this râle disappears, and in applying the ear to the thoracic parietes, we either no longer perceive any thing whatever, or else we hear, where the sound is dull, the bronchial respiration, which is almost invariably accompanied by a peculiar resonance of the voice. The decubitus on the back still continues. The pulse, very frequent, remains strong and full, or else it exhibits a degree of weakness which is sometimes real, most frequently apparent. In this stage the prognosis is always very unfavourable; the patients die rapidly in a state of asphyxia.

However, in this stage resolution may still take place. Then the dulness of the sound diminishes, the bronchial respiration disappears; we again hear some crepitous râle, at first alone, but afterwards blended with the natural respiratory murmur, which in its turn is also heard alone. The sputa repass to the catarrhal state; at the same time the dyspnœa and fever diminish, and then cease altogether. (Cases 5, 6, 7.)

It is often impossible to distinguish, from the nature of the symptoms, this second stage from the third. This latter has not really any other characteristic sign but the watery and brownish expectoration, more or less like the prune-juice already described; but this sign is not infallible; for on the one hand this expectoration may show itself without there being the grey hepatisation (Cases 24, 25, 26), and on the other hand, this latter may exist without such expectoration (Cases 27, 31, 38, 39). The extreme paleness of the face, its cadaveric appearance several days before death, can afford only mere probabilities.

Neither is it from the period of the diease that we can announce the existence of the second or third stage; for sometimes from the fifth day the lung is in a state of suppuration; sometimes after fifteen or twenty days, it is as yet only in the state of red hepatisation.

If it happened that the pus scattered through the pulmonary parenchyma were combined into a focus, and that the abscess thence resulting should communicate with the bronchi, auscultation would then probably detect gurgling and pectoriloquy, as in the case of tuberculous cavities.

Once the pneumonia has attained the third stage, is it still capable of cure? We possess no fact which will afford a solution of the question. Can it even be solved in the present state of science? In all the cases of cure, what sign can afford a certainty that there really was suppuration of the lung? Some have published, no doubt, cases of abscess of the lung after pneumonia, which terminated in recovery; but the signs derived from auscultation, which have been regarded in cases of this kind as announcing the existence of pulmonary abscess, and which afterwards disappeared according as the cure proceeded, are precisely those which we regard, from numerous verifications made on the dead body, as characterising mere red or grey hepatisation, bronchial respiration, and modification of the voice coinciding with it. We therefore think that in the cases of this kind recently published, the signs of hepatisation have been referred exclusively to an abscess.

Termination by gangrene is announced by the fetor of the breath, and the characteristic sputa already described (Cases 42, 43, 44).

86. The resolution of pneumonia, as of all diseases, may take place with or without crises; that is to say, be or not be accompanied by phenomena whose appearance coincides in a marked manner with the slow or sudden amelioration of the symptoms. Among these critical phenomena, the most common and most evident is increase of the cutaneous transpiration. In this point of view several kinds of sweats may be distinguished in pneumonia. Some exist during the entire course of the disease; the continual process then going on in the skin, seems to be a favourable circumstance which renders the disease less severe, and facilitates its resolution; but this kind of sweat is not properly a critical sweat; it is symptomatic. (Case 5.)

With some exceptions it may be laid down as a general principle, that habitual moisture of the skin, in pneumonia, is a favourable sign. It often happens that in this case, and without any other perceptible phenomenon occurring, the pneumonia gradually terminates by resolution; but at other times, the sweat appears on a sudden in greater quantity, if it already existed, or else it is suddenly established, if the skin had till then remained dry; and, in these two cases, we observe the symptoms of the inflammation amend rapidly; oftentimes the patients in such cases pass in a few hours from a very alarming state to convalescence. (Cases 1, 3, 6.)

Will it be said that here the sweat is but a mere effect? But, in this case, why before the appearance of the critical phenomenon should we most frequently observe a temporary exasperation of the symptoms? Should not the contrary happen? Should not the amendment precede the sweat, and not follow it?

There is no disease in which the existence of critical sweats seems more perfectly demonstrated than in pneumonia: *Ut plurimum per sudores terminatur peripneumonia.*—(Frank.) With respect to the explanation of the fact, it seems to us not easy to give a very accurate one. Will it be said that the sweat cures the pneumonia by the displacement of the *irritation?* But, in order that one irritation may cure another, it should be greater than it; now, is the slight irritation of the skin during the process of sweating capable of displacing the intense irritation which exists in the inflamed lung? A violent erysipelas would scarcely produce such an effect.

Pneumonia terminates also by other critical phenomena. Thus we have reckoned among the number of crises, diarrhœa and hemorrhage, which we have occasionally seen to occur. Authors mention but a very small number of well-attested examples of this kind. A remarkable case of critical hematuria has been recorded by Dr. Latour of Orleans.

A young man, a baker, on leaving his work all in a sweat, exposed himself to a very cold air. Immediately there occurred a shivering and lassitude, pulse strong and hard; pain of side very acute, bloody sputa. On the next day two bleedings; some ease. On the next day, slight gastric complication; a grain of tartar emetic. In the evening an exacerbation of the symptoms of the preceding day; intolerable pain of side. A third bleeding, which gave some relief. On the fourth day pain of side still more violent. Leeches, blister; towards evening, intense paroxysm; disturbed night, some delirium. On the fifth day, acute and pulsating pain in the lumbar region, suppression of urine; towards evening pain of the loins very severe; which seemed to be relieved by a bath; it soon became more severe. At last, the patient, in a state bordering on delirium, felt a desire to pass his urine, and discharged by the urethra, at one time, nearly half a pint of intensely red blood without any admixture. From thenceforward the symptoms became mild, and the disease declined. On the sixth day, the natural excretion of urine returned, and convalescence was rapid.

It has been stated that pneumonia was often critically terminated by abscesses principally seated in the upper extremities; we never met any such thing.

Finally, the expectoration also has been placed among the number of the crises of pneumonia. Boerhaave and his celebrated commentator Van Swieten, regarding pneumonia as the result of sanguineous obstruction of the arteries of the lung, thought that the blood which obstructed the small vessels, where it underwent a modification which changed it into morbific matter, passed, at the end of a longer or shorter time, from those vessels into the bronchi: if this passage could not take place, it was carried into the torrent of the circulation, and went from the system with the urine, stools, sweat, &c. Thence those different crises, among which the expectoration must be considered as the most frequent and most salutary. But such ideas can no longer be admitted: the bloody sputa of pneumonia should no more be considered as a crisis of this disease, than the pus formed on the surface of the pleura and peritoneum, when these membranes are inflamed, can be considered as critically terminating pleuritis or peritonitis.

87. Convalescence from pneumonia is usually short, when it is real. From the moment the pulmonary inflammation has ceased, the strength returns with incredible facility, notwithstanding the number and abundance of the bleedings which have been employed; but false convalescences are to be dreaded in this more, perhaps, than any other disease. In many patients a residue of pulmonary inflammation, announced by auscultation, continues for a longer or shorter time after the different rational symptoms of pneumonia seem to have disappeared; however, it rarely happens that, in this case, the attentive examination of the different functions will not lead one to suspect this residue of inflammation. Thus the patient no longer feels any dyspnœa, his inspiratory movements seem natural, power of speaking unimpaired; but if he make any considerable exertion, if he wish to take a deep inspiration, if he keep up a long conversation, the attentive observer soon recognises that the respiration becomes short and accelerated, and that, according to a vulgar saying, the patient is easily put out of breath. After meals, this embarrassment in the breathing also manifests itself. There is not, properly speaking, fever; but the pulse retains a little of its frequency, and in the evening the patient feels some lassitude and illness. If the chest be then examined, a more or less marked crepitous râle is found, where the pneumonia was previously recognised. The aggregate of the symptoms now described may be more or less marked; if they are but little so, they will easily escape investigation; if auscultation is not employed, the patient will be considered as perfectly cured. It is unnecessary to say that from this error of diagnosis, either a speedy relapse, or a slow disorganisation of the pulmonary parenchyma, must almost necessarily result. One of the most valuable advantages of auscultation is to prevent the possibility of such fatal mistakes; with such admirable precision does auscultation point out in this case the real state of the lung.

We have still to point out another cause, and one that is unfortunately too frequent, of false convalescences after pneumonia: this cause resides in the rapid development of pulmonary tubercles. It seems, in this case, that, existing previous to the inflammation, they receive from the latter a fatal impulse which favours both their increase and their softening. Often then, at the same time that the tubercles are developed, the inflammation of the parenchyma ceases altogether, so that the chest resounds perfectly well, and the respiration is found to be clear in every part, but still louder than natural: still the strength, far from being re-established, diminishes every day; the patient wastes away, he coughs and breathes with difficulty; every evening he has some fever. These symptoms become more distinctly marked, and in a little time there is no longer any doubt of the existence of pulmonary phthisis, the advance of which is often very rapid—(Case 34). Morton very well described this species of phthisis, which he called *phthisis a peripneumonia.*

Convalescence from pneumonia is not only shackled by the two preceding causes; sometimes the lung remains engorged with blood or serum. This engorgement is not inflammatory, for it does not yield to antiphlogistics, and is, on the contrary, removed by tonics; it is a sort of passive infiltration which succeeds the inflammation. Thus we have more than once seen, in persons debilitated by any cause, œdema follow erysipelas of the lower extremities; thus again, we often observe, after enteritis, serous infiltration of the submucous cellular tissue, &c. The crepitous râle, a slight dyspnœa, absence of fever, a state of general languor, accompany this sort of pulmonary engorgement. Such signs are no doubt insufficient to distinguish it from genuine inflammation, and the treatment is then the touchstone. Here, as in many other cases, it is only by feeling our way, as it were, that we can ever establish a good diagnosis, and consequently a suitable treatment. Passive engorgement of the lungs comes on not only after pneumonia, it supervenes also towards the termination of several other affections of long continuance, during the course of which decubitus on the back has invariably taken place; more than once have we seen it yield to the employment of polygala and kermes, after it had resisted the long continued use of demulcents, and even blood-letting. Gentle exercise, good air, and a somewhat nutritive diet, must also hasten its resolution.

88. It is a great question, frequently debated from the time of Hippocrates down to our own time, whether diseases have a natural tendency to terminate at the end of a certain number of fixed days called *critical days.* Such a question cannot be decided *a priori;* it is for facts alone to decide. Pneumonia is one of the diseases wherein it seems easier to solve the question, because, on the one hand, the precise time of its onset is most frequently very well marked, and because, on the other hand, the period of its termination is likewise equally well marked. We may observe, that in an hospital it is difficult always exactly to know how and when the disease commenced; so that it is rather in private practice that proper researches can be made regarding the periods of diseases and their critical days. The following is a summary of our observations regarding the duration of pneumonia in one hundred and twelve cases.

Number of Pneumonias.	Duration.
3	4 days.
2	5 do.
6	6 do.
23	7 do.
2	8 do.
4	9 do.
11	10 do.
13	11 do.
1	12 do.
2	13 do.
11	14 do.
2	15 do.
2	16 do.
9	20 do
1	27 do.
1	42 do

Of the pneumonias, the precise period of whose termination could not be determined,

Number.	Duration.
3	5 to 7 days.
12	7 to 14 do.
7	14 to 20 do.
4	20 to 30 do.

The result of this summary is, that the days on which the greatest number of pneumonias were observed to terminate, are the seventh, eleventh, fourteenth, and twentieth.

Of these one hundred and twelve pneumonias, only one lasted more than thirty days, and might be considered as a chronic affection. Authors do not seem to have called sufficient attention to the extreme rarity of chronic pneumonias not complicated with tubercles or melanoses. Within the last five years, we have seen but very few instances of red or grey hepatisation of the lung of a longer date than two months. Yet how does it happen that chronic pneumonia is looked on as rather a common disease? Probably because pleuritic effusions have been frequently confounded with inflammation of the pulmonary parenchyma. However, a well-marked instance of chronic pneumonia has been recorded by Bayle in his *Researches on Pulmonary Phthisis.* (Case 46.) The disease had lasted from three to four months; it commenced imperceptibly, and had been taken for phthisis. The right lung was found in a state of red hepatisation.

89. If it be exceedingly rare to find chronic pneumonia without complication, it is, on the contrary, very common to find the portions of lung surrounding softened tubercles in a state of chronic inflammation. Can we say that, in this case, the pneumonia preceded the formation of tubercles? We do not think it. In fact, in the first stage of phthisis, when the tubercles are still crude and few in number, the chest is still perfectly sonorous, and the respiration is heard in every part perfectly clear: this is the most general case. Therefore the pulmonary parenchyma is not inflamed at this period. If the patients die, the autopsy also proves the absence of this inflammation. At a later period, when the tubercles increase and begin to soften, some crepitous râle is often heard in several parts, without there yet being any dulness of sound. If death occur at this period, the pulmonary tissue around the tuberculous masses is found very much engorged, and oftentimes softened. (First stage and commencement of the second.) Finally, at a period still more advanced, when there is still more considerable softening of the tubercles, and cavities are formed, the sound is most frequently dull around the parts where auscultation detects the existence of tuberculous cavities, and there also the lung is found after death, hard, impervious to air, greyish, infiltrated with pus, in a word, such as it is observed in the third stage of pneumonia. We do not confound this purulent infiltration with the tuberculous infiltration so well described by Laennec.

These facts seem to us to prove beyond a doubt, that here the chronic pneumonia, consecutive to the formation of tubercles, results from the continual irritation which the latter keep up in the pulmonary parenchyma surrounding them. It is very far from being equally easy to prove that tubercles are not the product of an antecedent bronchitis: but this is not the place to discuss that question *.

---

* Whilst we acknowledge, that in a great number of cases the pneumonia arises only consecutively to tubercles, and therefore cannot be considered as their cause, we must also admit, that there are other cases where the chronic pneumonia has evidently preceded the formation of tubercles. This is what seems to take place, when in the midst of a lung almost entirely hepatised, some tubercles are found scattered in the nascent state. They are too small and too few in number to have been able to produce hepatisation of an entire lung; it is, on the contrary, this hepatisation which very probably has at least favoured their development. For a more ample discussion of this point consult my *Pathological Anatomy.*

No characteristic expectoration, no other sign but those furnished by auscultation and percussion, announce the existence of these consecutive chronic pneumonias. They are one of the causes which hasten the death of phthisical patients, either by the mere fact of their existence, or because they favour the development and softening of tubercles. They may be combatted with advantage, particularly in their first stage, by a judicious antiphlogistic treatment. Blood-letting is indicated in the course of phthisis much more to stop these intercurrent pneumonias, than directly to combat the tuberculous affection over which it seems to possess but very questionable influence.

90. After having considered pneumonia, such as it presents itself in the majority of cases, let us pass rapidly in review its numerous varieties; it is very important to know them all thoroughly.

Of these varieties some regard the seat. Thus, pneumonia may attack the two lungs, or only one: confined to a single lung, it may exist only in some circumscribed portions of it, be scattered in a manner over several isolated points, and in this way constitute a greater or less number of small partial inflammations. In the case of double pneumonia, the equal diminution of the sound on both sides, renders the information afforded by percussion either null and void, or unsafe and not to be depended on; it is unnecessary to say that then the prognosis becomes much more unfavourable. In the case of partial pneumonia, in consequence of the deep and circumscribed seat of the inflammation, the expectoration alone often reveals the real nature of the disease, and distinguishes it from simple acute bronchitis.

Other very important varieties regard the absence of one or more symptoms, whence latent pneumonia results. It is sufficiently proved that intense inflammation of the pulmonary parenchyma may exist without being announced by dyspnœa, cough, or sputa. Sometimes, too, it may happen that at the same time these signs are wanting, auscultation and percussion also cease to disclose the real state of the lung (Case 31): the diagnosis then becomes impossible. We have already remarked, that these latent pneumonias, which are but seldom primary, supervene particularly when an inflammation of the lung complicates another disease.

The different ages of persons affected with pneumonia introduce into the symptoms shades, which are striking enough to constitute two remarkable varieties of this inflammation, namely, the pneumonia of children, and the pneumonia of old persons.

We comprise under the title of the *pneumonia of children*, that which attacks them from birth to the age of ten. During all this period, pneumonia is very frequent, and it is one of the powerful causes of the mortality of children: it is then of great importance that it should be well understood. The symptoms announcing it are frequently very obscure. In fact, in children there is no expectoration; if the pneumonia is only in the first stage, and not extensive, percussion often detects no difference of sound in the different points of the chest. There is hardly ever observed so great a dulness as in the adult; but often by comparing attentively the sound yielded on both sides, we do not find an absolutely dull sound, but a less sonorousness on the side where the pneumonia exists. On this same side, auscultation detects some crepitous râle, with the same modifications which it presents in the adult. It is extremely rare that this râle entirely ceases to be heard; but it is confounded with the mucous râle more frequently than in the adult. There are also frequent cases where, in consequence of the seat of the pneumonia, the respiration retains all its clearness; in this case, the cough, dyspnœa, and fever, are no longer sufficient to characterise the pneumonia; the dyspnœa itself, too, may not exist, as in several cases of the pneumonia of adults.

However, the diagnosis is here so much the more important to be established, as it exercises the greatest influence on the treatment. In more than one case of pneumonia it has happened, that the cough and dyspnœa have been considered as the purely mechanical result of the accumulation of mucus in the bronchi; the only effort made was to unload the latter by the administration of emetics and different expectorants, and the employment of blood-letting was neglected, which, by destroying the cause, might have put a stop to the effect. It is, however, but fair to say, that after bleeding children are oftentimes relieved by the administration of a mild vomit, which in their case supplies the expectoration very advantageously. But we should be cautious not to substitute this secondary means for the primary and principal.

Post mortem examination seldom shows in children a genuine red or grey hepatisation of the lungs; most frequently there is observed simple engorgement, with or without softening of the tissue. It is this same state which we have already alluded to in adults, and which indicates, as has been already said, the passage from the first to the second stage. It is in children that the small partial inflammations which we have referred to are most frequently met; these inflammations occupy a number of points separated by a very healthy tissue, each of which often hardly equals the size of a nut. Thence, also, the frequent insufficiency of auscultation and percussion in a great number of the pleuro-pneumonias of children: the inflammation being, in some measure, scattered in them over a great number of points, it follows that it is only by isolated points that the sonorousness will be diminished, and the respiratory murmur modified.

The pneumonia of old persons often presents itself such as it is observed in the middle period of life; but it produces in general a much more rapid prostration; it seems also that in them the pulmonary inflammation arrives more easily and more quickly at the third stage. It often complicates the chronic bronchitis with which many old persons are affected: there is then observed great dyspnœa, which particularly engages attention, and from this leading phenomenon the name of suffocating catarrh is given to the disease. In a great number of cases of this kind, there is no expectoration, and the mucus accumulated in great quantity in the bronchi produces a mucous râle, which prevents auscultation from throwing any light on the state of the pulmonary parenchyma.

Here, as in the pneumonia of children, the different means by which we endeavour to favour the expectoration may be useful, but they should not form the basis of the treatment. Notwithstanding the great age and debility of the patients, we should not hesitate boldly to employ blood-letting. If, however, no relief follows the first bleeding, performed either with the lancet or with leeches, if after their use the prostration increases, we must immediately give up their employment, and have recourse to revulsives, applied alternately to the chest and extremities.

Pneumonia still presents several varieties with respect to its complications, such as typhoid fevers, pleuritis with effusion, pericarditis, arachnitis, gastro-enteritis, pulmonary tubercles, aneurism of the heart, &c. The symptoms of these different diseases and those of pneumonia are masked and complicated; great clinical adroitness is then required to separate in this aggregate of morbid phenomena that which belongs to lesion of such or such an organ. We cannot say anything general on this point, and refer to the cases contained in Article 4.

False pneumonia (*peripneumonia notha vel spuria*) has been described as a variety of inflammation of the lung. Under this head must be ranked several affections which simulate inflammation of the pulmonary parenchyma in several of their symptoms, but which differ essentially from it in the nature of the organic lesion. Thus an acute bronchitis, accompanied with fever, dyspnœa and viscid sputa, may impose on one for a pneumonia; but in this case, the chest remains sonorous, nothing is heard but some bronchial râle, and the sputa, though often presenting striæ of blood, are not uniformly combined with this liquid. There are cases, however, where the acute bronchitis seems to be confounded with commencing inflammation of the parenchyma, and the precise distinctions between these two diseases then becomes very difficult. Fortunately such a distinction is of very little importance in practice ; for a very acute general bronchitis, and a pneumonia in the first stage, as yet circumscribed, are attended with nearly equal danger, and present the same indications of treatment.

Another sort of false pneumonia is that which results from the sanguineous congestion of which the lungs are frequently the seat at the onset of the eruptive fevers (small pox, measles, scarlet fever). The patients then experience greater or less dyspnœa, which ceases as it were by enchantment, at the same time that the eruption shows itself. (Case 41.) Is it on this simple sanguineous congestion that the slight dulness of the chest depends, which had been remarked by Avenbrugger and Corvisart, in persons who were in the onset of an eruptive fever?

During the course and at the termination of several chronic diseases, the lungs present, more especially posteriorly, a serous or sanguineous congestion, which differs from the preceding in its appearing to be essentially passive. One might say that in this case the blood engorges the lungs, as in scorbutic persons it engorges the tissue of the gums, the skin, the different mucous membranes, as in others it fills and swells the spleen.

Finally, among the number of pseudo-pneumonias we think it right to place the group of symptoms described by Stoll, under the title of *bilious pneumonia.* These symptoms, in fact, do not seem to us by any means to characterise a genuine inflammation of the lung. Loss of appetite, bitter taste in the mouth were observed, says Stoll, as precursory phenomena. At the end of a longer or shorter time wandering shiverings supervened, followed by heat, oppression, and a pain seated behind the sternum, or in one of the sides ; this pain was not increased either by cough, or by inspiration. Decubitus on either side ; hypochondria tense or painful ; the patient had a sensation of weight at the epigastrium, which was painful to the touch. They had bitter eructations, tongue white, green, or yellow, little thirst, nausea and sometimes vomiting, constipation or bilious diarrhœa ; the sputa were thick, white, or greenish, fever variable. Stoll dispersed this group of symptoms by means of one or two vomits. It is our opinion that this pneumonia as he called it, was nothing but pulmonary catarrh with gastric or intestinal disturbance. Thence the utility of evacuants. We have more than once met such a state, and we have seen it yield to the same mode of treatment. But Stoll's ideas, on this matter, have not been always thus interpreted. The name of bilious pneumonia has often been given to a genuine inflammation of the lungs, because some symptoms of gastric disturbance were observed, and especially because the sputa presented a yellow tint, which was attributed to bile, and which is evidently nothing but the result of the intimate mixture of blood and mucus in certain proportions. In this case the employment of evacuants should be but very secondary, and it is by large bleedings that we should combat the pulmonary inflammation, however marked the complication called bilious may be. Several patients have presented to us, combined genuine pneumonia, this bilious complication announced by the yellow tint of the face, bitterness of the mouth, thick coating of the tongue, nausea, eructations, weight in the epigastrium, &c. The emetic diminished in some the disturbance of the digestive functions ; it never removed the symptoms of the pneumonia, which yielded only to blood-letting.

91. The prognosis of pneumonia, generally unfavourable, varies according to the degree of the inflammation, its extent, its seat, the nature of the symptoms and the complications.

It is not necessary to mention that the first stage is less dangerous than the second, and the second than the third. Several cases have satisfied us that the pulmonary inflammation may still be very well resolved, though a great portion of the lung be in a state of red hepatisation. We do not know an instance which proves the possibility of a cure in the third stage.

A pneumonia in the first stage, but very extensive, is generally as dangerous as a pneumonia in the second stage, but much more circumscribed.

By reason of unaccountable idiosyncracy, simple engorgement of the lung, occupying but a small portion of this viscus, is sometimes fatal, whilst in another individual, placed in the same circumstances, a red hepatisation, occupying more space, terminates in resolution. Such cases are luckily very rare, and do not destroy the general rules laid down.

Inflammation of the upper lobes is generally more dangerous than that of the lower lobes.

The state of the respiration modifies the prognosis more than any other symptom. A considerable dyspnœa, whatever be the state of the lung, is always an alarming sign. The state of the pulse, on the contrary, can hardly furnish any certain datum regarding the issue of the disease; its weakness, particularly, is often but apparent. If, however, a weak pulse coincides with considerable difficulty of breathing, and if it does not become more full after the first bleeding, we should infer from this, that the inflammation is very intense, and consequently affords a very alarming prognosis.

Great viscidity of the sputa, their deeply reddened tint announces intensity of the inflammation; their return to the catarrhal state indicates that resolution is going on; watery and brownish sputa, more or less resembling prune-juice, should incline us to suspect suppuration of the lung, and are in general a bad sign. The same may be said of greyish and purulent sputa; their difficult excretion, their retention in the trachea and bronchi, announce a fatal termination; their suppression, owing to the cessation of their secretion, is less unfavourable; it indicates, however, in general, an exasperation of the inflammation; it does not always prove that a recovery will not take place. Those pneumonias which are not accompanied with any expectoration during their entire course, do not seem to be more dangerous than the others. Only, as their diagnosis is more difficult, they are often overlooked, and terminate fatally, because they are not properly treated. Thence the greater danger of latent pneumonias.

Constant dryness of the skin is much less favourable than its habitual moisture. The resolution of pneumonia often coincides with the appearance of profuse sweats.

We shall not insist on the greater danger of pneumonia, when it is complicated with other diseases, whether it precedes them, or declares itself during the course of the latter. The pneumonia which attacks phthisical patients seems less injurious by its own immediate danger, than by the baneful influence it exercises over the tubercles, whose increase and softening it favours.

92. Pneumonia is one of those diseases whose treatment is at once most simple and most efficacious. For many ages back, observation led physicians to employ copious blood-letting in this affection more than in any other. It is easily conceived, in fact, how useful copious bleedings may be in this case; they not only act as in all other inflammations, they have the additional advantage of directly diminishing the quantity of blood, which, in a given time, must traverse the lung in order to be subjected to the action of the air; they diminish then the activity of its functions, and thus concur in curing the pneumonia, in the same manner as an ophthalmia is cured by preventing the exercise of vision, and rheumatism by prescribing rest.

The application of leeches cannot here be substituted for opening a vein; but we may employ both kinds of bleeding simultaneously with great advantage.

In former times there was great disputing as to which was the most suitable part to bleed from. The place of election is of little importance; but what is essential is, that the blood should flow in great quantity at once by a large orifice.

Fainting, however, should be avoided. Quarin regards syncope produced by bleeding as more dangerous in peripneumonia than in any other case. We have not verified this fact.

The first bleeding should, in general, amount to sixteen ounces, and even twenty, when the disease is at its onset, when the dyspnœa is severe, and the patient strong. According as the blood flows, there is ordinarily observed a perceptible amendment of the symptoms; the breathing particularly becomes more free. When the pneumonia is slight, this amendment continues, and the signs of commencing resolution soon manifest themselves. It is in cases of this kind that it may be truly said that the bleeding has really removed the disease; but however slight the pneumonia may be, the amendment which follows the first bleeding lasts but a few hours, then the dyspnœa re-appears, and the inflammation re-commences as if no bleeding had taken place. We must not hesitate then to open the vein again: thus, two or three bleedings may be employed during the first twenty-four hours. On the following days, the bleeding must be repeated boldly, should the symptoms not yield. The indication for bleeding should be derived much less from the state of the pulse than from that of the respiration. How many times have we not seen blood-letting employed with the greatest advantage in persons whose pulse was small and contracted, face pale, extremities almost cold, general debility apparently very great, but in whom at the same time the breathing was very much embarrassed. In other patients, on the contrary, whose pulse is full and hard, but whose breathing is sufficiently free, bleeding is much less imperatively called for. If we wished to call in the authority of great masters in support of those precepts, we should state that Stoll, solely guided by the extreme difficulty of breathing, bled eight times with success, in a short space of time, a patient who appeared very much debilitated, and all whose body was covered with petechiæ. The consideration of age should seldom prevent us from employing numerous bleedings. Aged persons affected with pneumonia have been often left to die, because the physician did not dare to bleed them. Frank mentioned that he bled a man eighty years old, whose life was in danger in consequence of severe pneumonia, eight times with success. Recent experience has satisfied us that bleeding should no more be spared in children than in adults. However, as in them but little blood is obtained from the orifice, in consequence of the smallness of their veins, we should particularly insist on numerous and frequent application of leeches. Many practitioners are afraid to bleed women affected with pneumonia, when they are menstruating. This is, in our opinion, a frightful mistake. To wait, in this case, till the menstrual flux has passed, in order to combat by bleeding an intense inflammation of the lung, is to render it almost necessarily fatal. Our view of this matter is strengthened by that of De Haen and of Frank.

Up to what period of the disease should bleeding be employed? Sixteen centuries ago, Galen laid it down as a general principle, that we should have recourse to bleeding, whatever was the day of the disease, aye, even if it were the twentieth, every time it was indicated. However, physicians, forgetting this precept, have been for a long time of opinion that it was dangerous to bleed in pneumonia after the fifth or, at farthest, the sixth day. This precept was given by one of the greatest modern observers, by Pringle, who expressly recommends not to open a vein, after the characteristic sputa of pneumonia have commenced to appear. It is unnecessary to say how erroneous such an opinion is; we must bleed, whatever be the period of the disease, every time the nature of the symptoms calls for bleeding. Even the existence of the third stage does not always contra-indicate it; for this third stage often co-exists with the two first, and the latter may still be combatted with advantage by the bleeding. Frank is one of the physicians who have insisted most on the great advantages which bleeding may still present, at a very advanced period, and even when the patients seem moribund. We think it right to transcribe here the remarkable passage where he expresses his opinion on this subject: *In ultimo peripneumoniæ lethalis gradu, certe nec venæ sectio juvat, nec quodvis aliud remedium juvat; ac cum hujus aut illius vituperio inermem tam infaustis rebus artem opponimus; interim audaces, sæpe, non fortuna quidem, sed consilium juvat; nec rarò, quod vix dictum est, sub frigidis jamjam extremitatibus, facie vix non cadavericâ, pulsibusque minimis, vænam suffocanti ægro cum felici rerum exitu aperuimus, et vitæ sors unica ex cuspide hæsit lanceolæ.*

When, during convalescence, we observe some symptom which may cause us to apprehend a relapse, we should take some blood instantly; in such a case temporising would be fatal. We cannot repeat it too often: the residue of the latent inflammation, with which the lung often continues affected at the time of convalescence, and which auscultation alone, in many cases, can detect, cannot be combated with too much care. If we neglect blood-letting, if we content ourselves with the employment of hygienic means, we allow the inflammation to become in a manner domiciliated, and we favour, in many persons, the developement of phthisis pulmonalis.

However, blood-letting is not the only means by which pneumonia should be combated. When there is no longer any reaction, and that different local irritants can act only as revulsives, we must have recourse to them. The most favourable time for the employment of revulsives is principally indicated by the weakness of pulse, which continues, after repeated bleedings, apparently for the want of general reaction. It must be acknowledged, however, that nothing is more delicate than this point of practical medicine. It often happens that, of two persons placed apparently in the same circumstances, the one is visibly relieved by the application of a blister, whilst, in the other, the symptoms become worse. In the latter case we must not hesitate again to have recourse to blood-letting.

In what part should blisters be applied? Cullen, Stoll, and Pringle, placed them on the chest; Baglivi recommended that they should be applied to the lower extremities; M. Lerminier applies them first to the legs; he lets them heal, and then applies two more to the thighs; he only applies a blister to the chest when the disease seems to become altogether chronic.

The application of a blister to the arm, and even of a cautery, is often very useful at the period of convalescence, as often as there is any fear that the resolution of the pneumonia is not complete, and after recourse has been had to bleeding.

When there is still considerable reaction, and that we think it right however to have recourse to revulsives instead of blisters, we can apply sinapisms to the lower extremities, having rendered them less stimulating by the addition of some linseed meal. The sinapism is indicated, says Quarin, when the pulse is still full, the face red, and the heat considerable. In this case, he says, cantharides would increase the fever, produce delirium, and aggravate all the symptoms.

As long as bleeding is being employed, nothing but emollient drinks should be given internally. Frank has recommended for this purpose a ptisan consisting of two pints of decoction of barley, a drachm of nitre, and an ounce of simple oxymel. It is generally said that these drinks should be given warm; others, however, have not only given them cold, but have even combined them with snow.

It cannot be disputed but that at certain periods of the disease, at the same time that bleeding is replaced by revulsives, medicines more or less tonic and stimulating have been often substituted with advantage for simple emollient drinks. Many of our patients have taken, with striking advantage at this period, the decoction of polygala seneka, and kermes given in the dose of two or four grains in a four ounce potion. It is not when there is suppuration of the lung that these means can be really useful; they can then only excite a little reaction, the result of which is an apparent and momentary amendment. But the employment of these medicines seems to us really advantageous in the common cases where the pneumonia, still in the first stage, remains stationary, though there be no longer any evident signs of reaction, either local or general. It seems, in cases of this kind, that the inflammation is below the degree which is necessary to it, in order that it may be able to proceed to a resolution. The slight stimulation which tonics then introduce into the system favours this resolution, as that of several other inflammations, such as chronic ophthalmia, or chronic uretritis, &c. The same treatment is still more manifestly useful in the case where all the inflammatory state having disappeared, there merely remains in the lung a sanguineous or serous engorgement evidently of a passive nature. We have given several cases of this kind*.

Frequently also, in such cases, the employment of purgatives is followed by very happy effects. We have, more than once, seen persons in whom there no longer remained any other sign of pneumonia than a crepitous râle, which was heard in a more or less extensive part of both lungs, or of one only. There was at the same time slight dyspnœa; some cough; the pulse was in general free from frequency when the patient was at rest, or else it was accelerated only at intervals. These different symptoms yielded after one, two, or three purgations.

Let us now speak of the symptoms which may require some modification in this treatment.

Every time the pain of the side is severe, it should be combated by the application of leeches to the affected part. Leeches are here more effectual than general bleeding. Their effects will be seconded by the long-continued application of emollient cataplasms and fomentations. In children, whose thoracic parietes are very thin, these applications not only remove the pleuritic pain, they seem even to moderate the inflammation of the lung.

We have already particularly dwelt on the causes of suppression of the sputa. According to the nature of these causes, we should endeavour to re-establish them sometimes by bleeding and antiphlogistics, sometimes by the different stimulant remedies known by the name of expectorants, such as kermes, oxymel of squill, &c. This class of remedies have been strongly abused; they seem particularly useful when the patients no longer have strength to expectorate the tenacious and viscid matter which obstructs the bronchi. From this arises a new cause of dyspnœa, which alone may occasion death. In cases of this kind, the expectoration has been facilitated very much by making the patients inhale the vapour of diluted vinegar.

We have also already spoken of the cases in which the employment of an emetic may be necessary. We have seen that pneumonias called bilious have been too much multiplied, but still that a vomit may be given with advantage, when there are evident symptoms of gastric disturbance. It is but exceptionally that, in cases of acute pneumonia, the revulsive action of vomits may be considered useful.

There are persons who, by reason of a peculiar disposition, cannot be attacked with any inflammation whatever without nervous symptoms, more or less serious, manifesting themselves. There are others who, in consequence of the slightest inflammation, suddenly fall into a state of real prostration. In the former case, numerous applications of leeches should be made either to the neck or behind the ears; revulsives should be employed with precaution. In the latter case the treatment becomes very delicate: bleeding should be less profusely employed, and emollients continued for a shorter period. We should rather have recourse to revulsives; they should be applied to every part of the surface of the body, and if there be no complication of gastritis, tonics should be given. But it often happens that the adynamic state is but apparent; it results from the co-existence of a gastro-intestinal inflammation, and consequently calls for quite a different treatment. Real medical skill consists in being able to distinguish these different states, and in not wishing to reduce them all to one. In these latter times, the contra-stimulant treatment has been applied to pneumonia, and the preparations of antimony, in large doses, have been principally employed in the treatment of this affection. I have repeated these trials, and here are the results at which I arrived.

---

* We cannot insist too much on these remarkable cases, where an organ remains the seat of an entirely passive hyperemia after the irritation had ceased, which excited active hyperemia in this organ. (See Pathological Anatomy.)

I administered tartar emetic, from the dose of six grains to that of thirty-two in the twenty-four hours, and continued its employment for several successive days. I gave it either dissolved in four glasses (verres) of infusion of orange leaves, or concentrated in a five-ounce mixture. In none of these cases, except two, did I see any serious accident arise from this treatment: sometimes the patients manifested no sign of gastric or intestinal irritation; they had neither nausea, nor vomiting, nor diarrhœa, nor abdominal pain; the tongue remained moist and free from redness; sometimes the patients had nausea, which in some became so distressing, that it was impossible for them to continue the use of the medicine; others, in fine, had vomiting and diarrhœa. But in all the cases which fell under my observation, nothing more was necessary to dispel the unpleasant symptoms but the discontinuance of the tartar emetic.

From these facts it follows, that tartar emetic may be given in a large dose for several successive days, without its use being atttended, in the great majority of cases, with any unpleasant effects regarding the digestive passages. But is this medicine useful? My answer is, that without meaning to deny what has been stated by others, in none of the cases observed by myself have I seen the pneumonia beneficially influenced by the use of tartar emetic in a large dose. This medicine has not appeared to me more effectual against pneumonia in the cases where it was *tolerated,* than in those where it occasioned painful nausea, vomiting, or diarrhœa.

I also tried the white oxide of antimony in the treatment of pneumonia; I gave it either generally, or in a five-ounce mixture, from the dose of a drachm (gros) to that of eight drachms in twenty-four hours. In no case have I seen this medicine, provided it was well washed, produce any appreciable disturbance in the digestive passages. I never saw, as some have stated, that the white oxide of antimony lowers the respiration and circulation. With respect to its therapeutic influence, it appears to me to be not at all marked, and I doubt very much, from what I have seen myself, that this agent was ever of any advantage in the diseases in which it has been employed *.

---

* Rasori, an Italian physician, was the first who introduced tartar emetic in the treatment of pneumonia, in 1808, and that not for its emetic effects, but for its *contra-stimulant*, or anti-inflammatory properties; his mode of giving it was as follows:—After one or more bleedings, and occasionally without any bleeding, he gave from twelve to twenty-four grains, or in severe cases, from a scruple to half a drachm, during the day, and the same he repeated at night: these doses were daily increased, until they amounted to a drachm or several drachms in the twenty-four hours. The result of this practice was, on the whole, successful; the number of deaths being about 22 per cent. in the civil hospital, and 14 per cent. in the military. —— Laennec's mode of giving it was thus:—Immediately after bleeding, he gave one grain of the tartar emetic, dissolved in two ounces and a half of cold weak infusion of orange leaf, sweetened with half an ounce of syrup of marsh mallows, or orange flowers; this he repeated every hour for six times, after which, unless the symptoms were urgent, he suspended the use of the medicine for seven or eight hours. But when the case was urgent, he continued the medicine uninterruptedly until some amendment took place, sometimes increasing the dose of the tartar emetic to a grain and half, two grains, or even two grains and half, without at the same time increasing the quantity of the vehicle. For further particulars regarding the employment of tartar emetic in pneumonia, see Dr. Forbes' admirable translation of Laennec's work, 4th edit. p. 232, et seq.; also, a very instructive and interesting note by Dr. Forbes (p. 244), concerning the history of this medicine, in which note the reader will find the testimonies of different practitioners regarding its efficacy. It may be well to mention that Dr. Forbes himself, *non sordidus auctor*, in giving the result of his own experience, says that, "in pure pneumonia, the tartar emetic, in

large doses, is the most certain and powerful remedy we possess, excepting, perhaps, blood-letting; and that in many cases it is capable of producing the most striking and beneficial effects, when blood-letting is no longer applicable." Drs. Graves and Stokes, of Dublin, also speak favourably of this medicine; they, however, make it secondary to blood-letting. They commence with a mixture, containing six grains, for the first twenty-four hours, and add to this two or three grains each day afterwards, as the severity of the case may require, till fifteen grains are given daily; beyond this quantity they do not go. They employ general and local bleeding freely. The treatment by this medicine they consider most eligible in strong constitutions in the early stage of inflammation, before hepatisation has taken place. Dr. Williams coincides in the above views.—See Cyclopædia of Practical Medicine, vol. 3, article *Pneumonia.*—Trans.

SECTION III.

OBSERVATIONS ON PULMONARY PHTHISIS.

CHAPTER I.

NATURE AND SEAT OF PULMONARY TUBERCLES.

1. In lungs, several of whose lobules are in different degrees of inflammation, so as to contrast by their colour and consistence with the surrounding lobules, we sometimes find within these diseased lobules very small whitish points, of which some, consisting of a liquid matter, resemble a small drop of pus, and are, like the latter, easily removed by gently passing the back of a scalpel over them. Others of these points have a greater consistence ; the matter constituting them seems to pass by little and little from the liquid to the solid state ; having at length arrived at this state, it presents the appearance of what is called *tuberculous* matter ; in other words, it constitutes a small rounded mass, of a yellowish white, and of great friability, as if the molecules composing it, being originally separated by a more liquid matter, had still but little cohesion between them. The lobules in the midst of which these white points appear, present not only the different ordinary degrees of pneumonia ; sometimes we have seen these lobules really infiltrated with a yellowish serum, and, like œdematous parts, they retained the impression of the finger. This peculiar alteration, this real œdema of of the pulmonary lobules, with formation of tuberculous points, seemed to exist to us more frequently around tubercles in the horse than in man. Neither can it be said that this state of the lobules is always consecutive on the development of tuberculous matter, for in several lobules thus infiltrated, no trace of the latter can be found. In some parts we observe on the surface of the lobules or in their substance only some white, very small points, almost microscopic ; in other places they are multiplied and united, and lastly, it sometimes happens that entire lobules seem formed merely of these points crowded together. Then the result is a large whitish mass, called *tubercle*, which is nothing but a lobule successively attacked and occupied by white points. This disposition might be appreciated with peculiar ease in a case which we lately met, and where each affected lobule was exactly circumscribed by the interlobular cellular tissue, which was thicker and more apparent than ordinary, but exempt from all appearance of tubercles. At other times, on the contrary, the spaces usually occupied by this same cellular tissue, are partly filled with a whitish matter, which does not lay hold on the lobules, and which, by reason of the nature of the tissue occupied by it, constitutes a track of concrete pus around lobules which have remained sound. It may also be laid down as a general principle, that when the latter are diseased, the cellular tissue surrounding

and isolating them is equally affected: this cellular tissue is then for each lobule what the pleura is for the entire lung. The most frequent of these alterations of the interlobular cellular tissue consists in a reddish infiltration, such as exists in certain commencing phlegmons; in the midst of this infiltration we have observed tubercles in the form of very small isolated white points. At other times, in fine, it is an entire pulmonary lobe which is uniformly inflamed; then we can no longer distinguish either the limits of any lobule in particular, or the interlobular cellular tissue. But often in the midst of this great extent of hepatised parenchyma, we observe a greater or less number of small white points, similar to those which we have described in these lobules, with their different degrees of consistence. In a case recently observed we satisfied ourselves that the matter which constituted these white points was inclosed in very fine bronchial ramifications, in that part where they may be conceived to be on the point of forming vesicles. What was remarkable in this same case was, that the lower lobe of the two lungs was inflamed, but in different degrees. On the right the inflammation was more recent, and the pulmonary parenchyma was only in the state of red hepatisation: there was no appearance of these white points, nor any trace of tubercle. On the left the inflammation was of a longer standing: the parenchyma of the lower lobe was in a state of grey induration: it presented a great number of these white points, some liquid, like a small drop of pus, others of a greater consistence, and rising by degrees, in a manner, to the state of tubercle.

In the different cases now mentioned, what do we obtain as the primary origin of tubercle? Nothing else but a secretion of matter which seems to be produced indifferently, either in the last bronchi and in the vesicles which succeed them, or in the cellular tissue interposed between the latter, or in the interlobular cellular tissue. This matter, which seems to be primarily liquid, becomes solidified at a period more or less remote from that at which it was secreted, and becomes a tubercle. Is every tubercle formed thus? Before drawing this consequence and transforming it into a sort of law, let us see whether we shall find other cases, where the tubercle seems to have another mode of primary formation.

2. In several individuals who had laboured under a chronic bronchitis more or less intense, we found, scattered through the pulmonary parenchyma, small rounded or elongated bodies, reddish or greyish, sometimes remarkable for their softness, sometimes, on the contrary, rather hard, and sometimes even of a cartilaginous appearance. These bodies appear equally in the midst of a healthy or diseased pulmonary parenchyma. Their number is very variable; sometimes there are only five or six found scattered through the entire extent of a lung; sometimes an immense quantity may be observed. It is these bodies which, when they are greyish and of, as it were, cartilaginous hardness, constitute the pulmonary granulations so well described by Bayle with respect to their external form. In these later times Laennec has expressed his opinion that the granulations of Bayle were nothing else than a first degree of tubercle; he rested principally on this circumstance, that in the centre of these granulations a white point is often seen to appear, which announces the moment when, according to Laënnec, the granulation becomes transformed into a miliary tubercle. First it might be objected to this opinion, that the granulations of Bayle are very frequently developed in the lower lobes of the lung, and that consequently if they were destined to become tubercles, we see no reason why caverns should not exist towards the base of the lung as often as at its summit. It is true that in the small bodies of which we speak, white points are often observed; but we have ascertained that the latter do not always appear in the centre, as Laënnec says; they are observed indiscriminately through all parts of the granulation; often, for instance, they attack its circumference before they occupy its centre. Besides, if the granulations described by Bayle were nothing else but nascent tubercles, they should be met, sometimes at least, existing in other organs previous to miliary tubercles; now this has never

been observed, either within the parenchyma or on the surface of the membranes. The smallest rudiment of tuberculous matter met with in these different parts, always presented itself under the form of white points very different from pulmonary granulations. In the intestines, indeed, besides these white points, we often enough find small round bodies which are greyish, like the pulmonary granulations of Bayle; but these bodies are follicles more or less developed, as we shall prove elsewhere. With respect to the granulations observed on the surface of serous membranes, M. Chomel has already very clearly remarked that between them and pulmonary granulations there is but a common name (Dict. de Méd., 18 vol. article *Granulations*). The grey and hard granulations of Bayle seem to us to be only one of the forms of the bodies of which we now speak; thus we often find them red and of greater or less softness; if they are separated from the parenchyma which surrounds them, we see that several unite in clusters, or else in beads. We may be assured by attentive examination, that such of these bodies as are white or greyish, and as it were of cartilaginous hardness, were at first reddish and soft. In one or other of these states, we likewise see, though not always, white points scattered through their interior; often also they are partly coloured black. If there be any organ in the system with which we can compare these bodies in their different states, when they have been separated by a careful dissection from the tissue surrounding them, it is unquestionably with lymphatic ganglions, either in the healthy state, or particularly in a state of inflammation*.

The analogy is peculiarly striking in the horse, where the large size of the objects allows a better examination of them. These bodies, red and soft, exactly resemble small lymphatic glands affected with acute inflammation; when greyish and harder (granulations of Bayle), they may be compared to these same glands in the state of chronic inflammation. In the latter we may often see the tuberculous matter deposited in the form of small isolated points, which gradually multiply and evince a tendency to combine, so that there comes a moment when the lymphatic ganglion no longer really resembles any thing but a large tubercle; and it is in precisely the same way that the white points appear and become developed in the pulmonary granulations. Let it not be objected here that in the normal state anatomy does not show the existence of these ganglions in the lung; for there are lymphatic vessels in the lung; and where these vessels exist, observation informs us that under the influence of inflammation lymphatic glands may become developed which did not exist, or at least were not visible before. Certainly the appearance of these granulations, and still further the analogy of the mesenteric ganglions which become engorged and tuberculous consecutively on a chronic enteritis, seemed naturally to incline one to admit that the pulmonary granulations are nothing else but lymphatic glands. This opinion is also very ancient. Morton long since expressed the idea that tubercles were owing to engorgement of the glands of the lung. This same opinion is contained in Mr. Portal's treatise on pulmonary phthisis. And in later times M. Broussais has lent it the support of his great talents; so that at present we have in France just three opinions respecting the nature of pulmonary granulations: some, with Bayle, consider them an accidental production, *sui generis*, which has nothing analogous in the healthy state; others, with Laënnec, also consider them an accidental production, but not differing essentially from tubercles, and being the first degree of them; others, in fine, with M. Broussais, say that they are lymphatic glands engorged.

Attentive observations have led us not to admit any of these three opinions, with respect to the nature of pulmonary granulations. According to us, these granulations are not an accidental production; neither are they lymphatic ganglions, though they very often have the appearance of them. As long as we were content to examine a granulated lung by cutting it in slices, and then separating with the scalpel the granulations from the tissue surrounding them, we were strongly inclined to consider them, by reason of their appearance, as lymphatic ganglions; we thought, however, that this opinion was but a mere conjecture, which should not be rejected without examination, but which should not have become a certainty unless an injection, thrown into the lymphatic vessels of the lung, had penetrated the granulations, as it elsewhere penetrates the lymphatic ganglions.

---

* We entreat of those who would wish to verify these assertions carefully to separate the granulations from the tissue which surrounds them; for their appearance is then very different from that which they present, when one merely examines them on the surface of a section made in the lung.

We then sought another mode of investigation: we set about to separate from one another a certain number of pulmonary lobules, without cutting them, or altering their tissue in any way. Here is what we observed in individuals affected with chronic bronchitis, and whose lungs contained at the same time either tubercles, or granulations in different degrees, from that wherein they are still reddish and soft, to that wherein they are greyish and hard, as cartilage.

Several lobules, in some points only of their extent, no longer presented any trace of the vesicles which constitute them, and in their place there was observed one of the following appearances:—1st. an uniform reddish colour, without increase of consistence; 2nd. a greenish or greyish colour, the consistence not being increased; it was very evident that in these two cases the air which distends the vesicles in the healthy state, had been succeeded by a liquid, whether the latter filled the vesicles themselves, or existed in the intermediate cellular tissue, and the vesicles were not distended but compressed. In the first case, the liquid seemed to be blood; in the second, a serosity more or less pure. 3rd. In other points there was observed the same disposition of the vesicles, the same opacity, the same colouring, and still more, a variable increase of consistence, which arose by degrees to cartilaginous hardness; the existence of the latter coincided with a whitish or greyish tint, mixed often with a black colour. The different states just described are manifestly nothing else but inflammations of a certain number of vesicles which unite in thousands to constitute a simple lobule. As long as the latter is not cut into, we still see but an uniform surface, and nothing resembling granulations; but if an incision be made in the points intermediate between the inflamed portions, and not far from the latter, a new appearance presents itself; the vesicles which remained sound were scarcely cut into when they emptied themselves of the air which distended them; in virtue of their contractility of tissue, they must necessarily return on themselves and be effaced; the inflamed portion then remains isolated, and presents itself (a thing well worthy of attention, and also quite natural) under the appearance of rounded or oblong bodies, which, according to the degree of inflammation, are variable in colour and consistence. Greyish and hard, these bodies are evidently nothing else than the pulmonary granulations of Bayle. It may be conceived, in fact, that every time an incision is made into a lung which is affected with the species of partial, and in some respects vesicular inflammation in question, we should give rise to granulations, in the same way as we have them produced on making an incision into a lobule previously isolated. Let there be two lobules presenting, when touched externally, some hardnesses unequal and similar in both: make an incision into one of these lobules, you will see granulations appear variable in size, consistence, and in form; separate the other lobule by a careful dissection from the cellular tissue which separates it from the neighbouring lobules, you will no longer have any granulations, but you will only find some points of the lobule differing from the remainder in colour, consistence, and the disappearance of the vesicles.

Thus, then, we regard the granular phthisis of Bayle as resulting merely from the existence of a great number of partial *vesicular* inflammations, in the midst of the pulmonary parenchyma. These inflammations may be so multiplied, that the granulations which they produce, when an incision is made into the lung, touch and become confounded; the pulmonary parenchyma then appears uniformly indurated. But this is merely apparent, and by a more attentive examination we may easily satisfy ourselves, that between the granulations the pulmonary parenchyma has retained its healthy state, or at least, that it is not indurated. It is extraordinary that stress has been laid on these granulations, when they are greyish and hard, and that no author, to our knowledge, has spoken of these same bodies whilst they are still red and soft. However, the study of this first stage might have been a means of arriving at more accurate notions regarding the real nature of pulmonary granulations; there would then have been seen in these latter only a shade of the grainy appearance of pulmonary hepatisation. Besides, it is unnecessary to say, that the symptoms marked by Bayle as appertaining to granular phthisis, are also those which might be admitted *à priori* as depending on the simultaneous existence of a great number of partial inflammations of the lung; such in particular are the great dyspnœa at the frequent attacks of hemoptysis.

As we have seen the tuberculous matter appear in the midst of a lobule inflamed through its entire extent, in the same manner if one point of these lobules be separately attacked with inflammation, it is in this point particularly that the tubercle will be deposited.

3. There are some cases where the tubercle presents itself in the midst of a lobule which appears perfectly healthy. But has no process of congestion or of irritation then preceded its formation? Before answering this question, let us recollect that abscesses surrounded by a very healthy tissue have often been found in different parenchymatous structures, and yet there was no hesitation in admitting that these abscesses had succeeded an inflammatory process; they have even been given as proofs of the antecedent existence of this process. From the circumstance, then, that around a tubercle no inflammation is found, we are not warranted in concluding that the latter has not existed. We shall see at a subsequent period how far attention to the symptoms is or is not favourable to this conclusion.

4. In the different cases passed in review, the tuberculous matter always presented itself to us as a simple product of secretion. This product, appearing to be primarily in a liquid state, then becomes solid, as if by a sort of crystallisation, according as its more fluid particles become absorbed. In this product, moreover, we find neither vessels, nor canals, nor areolæ, nor fibres, nor laminæ, nothing, in a word, which suggests the idea of organisation; it appears to us, consequently, that it is giving an incorrect idea of the mode of formation of tubercle, and its nature, to designate it by the name of *accidental tissue:* it, in fact, presents to us none of the characters which, with anatomists, constitute a tissue. But if tubercle is not a tissue, why, in every part wherein it is developed, does it always assume almost an identical form, namely, the rounded form? To this objection it may be answered, that the round form must necessarily be that of every secreted liquid when it is equally pressed on all sides; thus, with some exceptions which depend on local circumstances, and especially on inequality of pressure, abscesses generally assume a rounded form.

5. The formation of tubercle by secretion being admitted, we may go further, and seek whether it is not in a particular tissue that this kind of morbid secretion takes place. We do not think so; we believe, on the contrary, that every tissue capable of inflammation and suppuration may also secrete tuberculous matter. In the lung, in particular, observation shows that this matter may equally be produced, 1st, on the surface of the mucous membrane of the air passages, or in the bronchi, or in the pulmonary vesicles themselves; 2nd, in the cellular tissue which unites the different parts of the lung.

M. Magendie*, and after him M. Cruveilhier†, have stated it as their opinion, that tuberculous matter may form in the ultimate extremities of the bronchi. The following fact seems singularly adapted to confirm this opinion:—

During the month of May, 1825, we opened the body of a glandered horse, with M. Dupuy. The membrane of the nasal fossæ presented traces of chronic inflammation, with formation of tubercles. Some were also found in the lung. But what was more, towards the upper part of one of the lungs, there existed a large cavity, from whence a liquid purulent matter flowed in great quantities, in the midst of which there were suspended numerous white clots, and so closely resembling the matter which most commonly fills tuberculous excavations of the lung, either in man or in the horse, that every person present at the autopsy, at first thought, as well as ourselves, that an immense cavern existed at this part of the lung. But we were soon undeceived, when, after having given exit to all the matter contained in the cavity, we discovered that the parietes of the latter presented all the characters of the bronchial parietes when in a state of chronic inflammation. It was, in fact, but a bronchus considerably dilated; numerous ulcerations traversed its mucous membrane, and from the bottom of these ulcerations there were observed to rise, like ridges, numerous fragments of corroded roughened cartilages. Several of the smaller bronchi which succeeded that just now mentioned, were altered in the same way, and filled with solid clots of a white matter, friable, and crumbling under the finger like cheese, and which may be truly considered as the type of tuberculous matter. These bronchi did not communicate with any excavation. Thus, in this case, it is very evident that the tubercle had been the product of a secretion, and that this secretion took place on the surface of the bronchial mucous membrane, which was ulcerated and disorganised. But why could not the same phenomenon which takes place in the air-tubes of considerable diameter, also occur in the smaller tubes, in the capillary branches, and even in the vesicles, which seem to be but their continuation, or expansion‡? In some cases, in fact, we have satisfied ourselves, as well in the horse as in man, that a matter which altogether resembled small miliary tubercles at the moment the lung was cut into, was contained in extremely fine bronchi; but this seat cannot be ascertained, except when the tuberculous matter is only in its nascent state, that is to say, liquid or half liquid; it is then only that the ease with which it is forced out, by simple pressure, from the cavity where it was contained, allows us to ascertain that this cavity belongs to a bronchus, a circumstance which it is no longer possible to ascertain at a later period, by reason of the greater difficulty in extracting the tuberculous mass entire, and without any laceration.

Such is, in our opinion, one of the organic elements of the lung in which tuberculous matter may form; but it may also be produced elsewhere: thus we have already cited facts which prove that tubercle may also be secreted in the interlobular cellular tissue: if this fact be conceded, its consequence also must be admitted, by acknowledging that the production of tubercle may also take place in the cellular tissue, which in the interior of each lobule separates and again reunites the vessels, nerves, and bronchial ramifications; for it is a well-established law, that the diseases of a tissue must be the same in the different parts of this tissue, except some cases where its structure is accidentally modified. Are instances required of tubercles formed and truly secreted as pus in different parts of this same cellular tissue? We have seen tuberculous matter irregularly deposited between the muscular fasciculi of one of the arms of an individual in whom this limb was the seat of old and extensive abscesses. We may here refer in particular to an important fact, and one which has, no doubt, been seen by all those who have opened the bodies of a certain number of children. It is known that in them encephalic tumours are as common as they are rare in the adult; now, in several these tubercles were not seated in the cerebral substance itself: often, for instance, we have seen the laminæ of the cerebellum separated and pressed back, but not occupied by depositions of tuberculous matter seated in the very vascular cellular tissue forming one of the membranes called pia mater. And here again we might convince ourselves of the correctness of the opinion which considers tubercles as the product of a secretion, as pus of a peculiar nature. In fact, we have more than once been able to see the matter called tuberculous to be at first but liquid purulent matter infiltrating the pia matter: it then became solid, gradually changed its appearance, and became tubercle. In an adult, in whom the serous membranes of the thorax and abdomen were covered with false membranes, with a deposition of small tuberculous masses, the latter were also found in the subarachnoid pia mater of the convexity of the hemispheres, but the tuberculous matter was still in its nascent state. In several points, in fact, there were found but mere drops of liquid matter, of real pus; in other parts the latter assumed greater consistence, and thus it was observed gradually to put on an appearance similar to that of the tubercles which filled the false membranes of the pericardium, pleura, and peritoneum. Observe that in this case, where there were also tubercles in the lungs, there was a remarkable tendency in inflammation to terminate in the formation of these bodies; in other individuals differently predisposed, the matter secreted by the inflamed serous membranes remained the pus of a phlegmon; in others it was but serosity; in others, in a word, it was transformed into a solid matter, which became a fibrous mass, a cartilaginous concretion, a petrifaction, etc.

---

* Journal de Physiologie expérimentale, tom. 1.

† Médecine pratique, etc., fascicule premier.

‡ Consult on the nature and disposition of these vesicles the splendid plates and text of Reissessen's work, De Fabricâ Pulmonum.

7. Lastly, it is not even improbable that in some cases the tuberculous matter is primarily formed in the lymphatic ganglions of the interior of the lung previously tumefied. If M. Broussais, guided by the analogy of what takes place in the mesenteric ganglions consecutively on an enteritis, was satisfied with saying that *sometimes* also the lymphatic glands of the lung are inflamed, become manifest by the tumefaction which they undergo, and at last become tuberculated after a bronchitis, he would have stated an opinion which is very probable; but when M. Broussais wished to generalise this idea, when he stated that pulmonary tubercles were constantly seated in the lymphatic system of the respiratory apparatus, he expressed an idea which seems to us to be in complete contradiction to that which observation teaches us, with respect to the manner in which tubercles are developed, whether in the lung, or particularly in other organs. We again repeat it, engorgement of the lymphatic ganglions of the lung may be the original commencement of a certain number of pulmonary tubercles; but a fact barely possible is very different indeed from a fact proved. With respect to the lymphatic vessels themselves, we have seen them, in two cases only, filled with a matter which had the appearance of tubercle. Whatever be the consequence which may be drawn from these two facts, the rarity of their occurrence obliges us to detail them here.

CASE 1.—*Lymphatic vessels of the periphery of the lung filled with tuberculous-like matter.*

A mason, twenty-five years of age, died of chronic pericarditis. He had had no other symptom with respect to his lungs except a cough, which lasted for the last four months before his death. At the base of one of the lungs there existed a circumscribed sanguineous infiltration (pulmonary apoplexy), which occupied a space nearly equal to that which might be filled by a small apple. Quite near this sanguineous infiltration, there was found a tuberculous mass of the size of a nut. In different points of its extent there were observed small red spots, owing probably to the tissue infiltrated with blood, in the midst of which the tuberculous matter seemed to have been developed. From the environs of the place where the latter existed, a lymphatic vessel proceeded, which passed between the pulmonary tissue and the pleura, and ceased to be visible not far from the bronchial ganglions. This vessel was tortuous, and in its course presented granulations, like that of a string of beads, of a greyish white; one would have said they were small lymphatic glands placed at intervals, as swellings in the course of the vessel. The latter having been cut into, it was ascertained that these granulations were owing to the presence of a concrete white matter, collected in clots in the interior of the lymphatic; from space to space the parietes of this vessel likewise presented an unusual thickening, and at the same time a diminution of transparence. At first view, and previous to the dissection, the swellings just described presented the greatest resemblance to small miliary tubercles. The latter existed also in great numbers in the interior of the same lung. The lung of the opposite side presented no other lesion than several traces of pulmonary apoplexy without any tubercles.

CASE 2.—*Matter of a tuberculous appearance in the lymphatic vessels of the lung and of other parts, as also in the thoracic duct.*

A woman affected with cancer of the uterus, died in the La Charité. The external surface of both lungs was traversed by a great number of white striæ, closely resembling in their disposition lymphatic vessels full of mercury. These numerous striæ were in fact vessels filled with a whitish concrete matter, of slight consistence, readily crumbling under the finger. Several of these vessels were easily followed as far as the bronchial ganglions, which were swollen, and had degenerated into a substance of a greyish white colour, creaking under the scalpel. The interior of the two lungs, and particularly the left, also contained several of these vessels, similar to white threads, enlarged at intervals. Sometimes they were found isolated; sometimes collected together in a greater or less quantity, they represented species of plexus, similar to those which, in certain animals, occupy the place of lymphatic ganglions. In other respects, and this must not be forgotten, there was nothing found in any part of the lungs resembling tubercles. But the absorbents of the lung were not the only diseased part of the lymphatic system: from several of the inguinal ganglions, which had degenerated like the bronchial ganglions, lymphatic vessels proceeded, distended by limpid and colourless serosity, and presenting from space to space white points easily displaced by slight pressure. The matter which formed these white points seemed then to be contained only in the cavity of the vessels. In fact, a slight incision having been made in the parietes of the vessels, this matter escaped from them spontaneously by the mere fact of the elasticity of the vessels which contained it. It presented the same characters as those of the matter enclosed in the vessels of the lung. Some lymphatic canals, thus distended from space to space by whitish clots, rounded into small masses, or elongated into a cylindrical form, were easily traced under the crural arch, into the pelvis, to the middle of an enormous cancerous mass which existed anterior to the body of the lumbar vertebræ. The thoracic duct disengaged itself from the middle of this mass, just at the last dorsal vertebræ. In three or four places this canal was very much distended, and, as it were, obstructed by the same matter which filled the lymphatics. It formed masses there the largest of which equalled the size of a nut, and which, as in the vessels, was contained in the cavity of the duct, without having any connexion whatever with its tissue.

Was the foreign matter of tuberculous appearance, found in these two individuals, in a part of the lymphatic system, introduced into it by absorption, or else was it formed or secreted there? Shall there be found in these facts a proof in favour of the opinion which places the seat of tuberculous affections in the lymphatic system? These diseases were formerly attributed to the alteration of the lymph. No doubt it was very wrong always to consider this alteration abstractedly from the state of the solids: but what was well known is this, that there is such a disposition of the system, in which every liquid, accidentally secreted, has a singular tendency to assume that particular appearance which constitutes scrofulous pus, or the matter called tuberculous. Thence particular therapeutic indications.

8. If, as we have endeavoured to prove, pulmonary tubercles are merely the result of a morbid secretion, it follows that, in every place where a tubercle is formed, a process must have taken place more or less analogous to that which takes place in any secreting organ whatever: now all that we can discover in the natural secretions, is a more considerable afflux of blood and of vitality; in other words, a congestion in the secreting organ; this fact is indisputable. Nutrition, properly so called, which is but another mode of secretion, can occur only under the influence of this same active congestion. Thus, to give a very obvious instance of it, the cartilage which is about to be transformed into bone, previously receives the red part of the blood; it is injected, and becomes the seat of an active congestion. The same phenomenon takes place, whether a temporary cartilage is ossified in the embryo, in virtue of the regular laws of formation, or a permanent cartilage is ossified in an accidental way, and under the influence of what is called an inflammatory process. What do I say? the entire fœtus itself, from the first moment of a fecundating coitus, to the term of intra-uterine life, is formed and developed only under the influence of these same appreciable causes, which, in the physiological state, give to a gland the power of creating a new liquid, and which, in the morbid state, give organisation to a false membrane. What is there in common in all these phenomena, except a sanguineous congestion, with a tendency to a new formation? This is all we perceive: what escapes us, is the special disposition in virtue of which, from the afflux of blood towards an organ, there result formations the most varied, first, according to the different organs; secondly, in the same organ, according to a number of circumstances more or less appreciable. If then tubercle be a secretion, if it be a new formation in the midst of an organ, all the known phenomena must incline us to conclude that its appearance has been preceded by an active congestion of the liquids in the organ where it exists. Is this congestion always an inflammation in the sense according to which this term has been this long time employed by surgeons? Certainly not, no more than there is inflammation in this sense in the gland, before it secretes the liquid which it is commissioned to form, or separate from the blood. Only here it is a normal function; there it is a pathological function, connected with a new disposition in the organ which is the seat of it. From the first period of the formation of the fœtus, the cellular tissue was disposed to secrete serosity: in virtue of a disposition accidentally acquired it will secrete natural blood, at other times pus and its numerous varieties, at other times tubercle, sometimes gases, &c. If the disposition to the formation of such new product is very marked, then the slightest congestion will suffice to give rise to it; wherever this congestion shall be repeated, the same product will show itself, and thus, for instance, what is called the *tuberculous diathesis* will commence. If, on the contrary, this disposition is less strong, in order that tubercle may form, it will be necessary that the congestion be sufficiently intense and sufficiently permanent to raise itself to the degree of inflammation. If, in fine, this disposition does not at all exist, the most severe, or most lasting inflammation will not produce tubercle. The frequent development of cerebral tubercles in children may be given in support of what has been just said. In them it is very true that tubercles are very frequently not preceded in their formation by any sign of well-marked inflammation of the brain or its membranes; but observe how irritable the nervous centres are in children; with what facility all diseases in them react sympathetically on the

brain. Remember, on the one hand, that children carry in their constitution a great predisposition to tubercles: this is proved by all their inflammations, which terminate more frequently than in the adult in the formation of a great number of tubercles. These facts being laid down, you will conceive the frequent formation of tubercles in the brain of children, and you will place the causes of them in the excess of vitality, in the activity of those congestions which the nervous centres present in this first period of life.

From the facts collected in this article, and the discussions to which they have given rise, we think we may draw the following conclusions :—

1. Pulmonary tubercles are the product of a morbid secretion[*].

2. It does not appear correct to designate them by the name of *tissue*, since they have none of its anatomical characters.

3. The pathological process which precedes the tuberculous secretion is an active sanguineous congestion, similar to that which precedes every process of secretion, normal or otherwise[†].

4. This secretion may take place in several of the tissues which enter into the composition of the lung[‡].

---

[*] The interesting researches of M. Dupuy, professor at Alfort, on the formation of tubercles in the lungs of several ruminant animals, and particularly of cows, may serve further to confirm this assertion. The result of these researches is, that on the external surface of the hydatids which are developed in the lungs of these animals, between the proper membranes of the entozoaire and the fibrous cyst enveloping it, there is often seen a whitish semi-liquid matter deposited, which on becoming dry resembles tubercle. In some cases the hydatid is destroyed and the cavity which it occupied becomes filled with a tuberculous matter, which is secreted, says M. Dupuy, by the inner surface of the cyst. We also found in the liver of a rabbit a mixture of tuberculous matter and hydatids, such as was observed in the ruminantia by the learned Alfort professor. The liver of this animal was studded with a great number of hydatids, which presented themselves under three different aspects. Some were entire and in contact with the tissue of the liver, from which they were separated merely by a thin membrane of a cellulo-fibrous nature. The others, which were also entire, were separated from this membrane by an irregular mass of whitish friable matter; one would have said they were small portions of curds, or chalk saturated with water. Others of these hydatids were burst, and nothing was found but the remains of their gelatinous tissue in the midst of the substance just described, which occupied their place.

There is no analogy between these facts and those contained in Dr. Baron's work. The latter gentleman thinks that every tubercle is preceded in its existence by a serous vesicle which he calls a hydatid. Observation of men and animals does not support this assertion: it merely proves that there is a coincidence in some cases between the formation of hydatids and that of tuberculous matter. As in the cases above mentioned, we have seen this matter surround hydatids and contribute perhaps to their destruction, in like manner in man have we seen blood, pus, and a variety of liquids effused around hydatids, and the latter sometimes exists only under the form of debris in the midst of a collection of blood or pus. In all these cases nothing is seen but a morbid secretion with products more or less different.

[†] Whilst I say that a hyperemia infinitely varying in intensity, most frequently precedes the tuberculous secretion, and should be considered its most frequent occasional cause, I no longer think that the previous existence of this hyperemia is necessary to the formation of tubercle; I think that in more than one case, it is only by hypothesis it can be admitted. In my opinion, the deposition of tuberculous matter within a tissue does not necessarily require that there should have been in this tissue either an increase or diminution of vital action; there is merely a perversion of its natural powers of secretion. This perversion itself may be the product of an antecedent irritation entirely local; it may also be independent of it; it may, in a word, be connected with the general conditions of innervation and hematosis in which the individual may be placed either originally or accidentally. On this subject I refer to my work on *Pathological Anatomy*.

[‡] Chemistry has recently discovered that several materials of the secretions, and even several of the elements of organs, exist ready formed in the blood (urea, cerebrine). On the other hand, some facts would tend to make us admit that pus reabsorbed from an abscess and carried into the torrent of the circulation, may be sometimes actually deposited on the surface or in the parenchyma of certain organs, without any previous inflammatory process. If then, which it is not absurd to suppose, it could be proved that the matter constituting tubercle is formed in the blood which has become diseased, as the immediate principle of the urine is formed there in the healthy state, the deposition of this matter in certain organs might be conceived to take place in a manner quite mechanical without any previous congestion. We might even go so

5. Observation shows that tuberculous matter may be secreted either on the free surface of the bronchi, or in the cellular tissue which connects the different parts of the lung.

6. It is probable, but has not been proved, that the pulmonary lymphatic ganglions are sometimes the seat of tubercles.

7. The opinion which places the exclusive cause of tubercles in an inflammation of the white vessels, and their exclusive seat in these vessels and their ganglions, is in opposition to several observed facts.

8. The lymphatic vessels of the lung and of other organs are sometimes found filled with a matter which seems identical with the matter called tuberculous.

9. The pulmonary granulations of Bayle are not tubercles in the nascent state.

10. These granulations are red and soft, before becoming grey and hard.

11. The appearance of granulations manifests itself but artificially, after cutting or tearing the pulmonary lobules.

12. These granulations are not a new production.

13. They consist of portions of lobules, separately inflamed *.

---

far as to admit that the deposition of tubercle, or of other accidental productions in one organ rather than in another, is connected with a modification in the physical disposition of the vessels, which carry the different elements of the blood through a sort of drawing-plate (*filière*), and effect their separation. In fine, this separation might be considered as resulting from a morbid state of the blood itself, under the influence of which the numerous materials which constitute it, might be separated more easily, so that in passing through the different organs, it should part with one or more of its elements; in one place colouring matter; here fibrine; elsewhere albumen; in other parts, some of its salts, and if it were itself diseased, new products, such as pus, tubercle, &c. In the present state of science these different ideas are but mere hypotheses; but probably they are not undeserving of examination; probably one day more profound means of investigation will give more probability to what is now but mere conjecture. It appears to me, that, in every science which does not admit immediately of mathematical application, there are two objects of study: the first is that of the facts demonstrated, and of the particular or general ideas flowing from them; the second consists in directing our attention to another series of ideas, which are as yet but conjectures more or less founded, or which even disagree with the ideas at present received. They must be considered, if I may so say, as materials in reserve, which will probably one day be taken up by more dexterous or successful hands, and which, only then, having acquired the right of circulation, will form part of the domain of science. So that it is not always useless to form hypotheses and discuss their merit, provided they be not given for truths. The existence of the materials of the secretions in the blood was a very few years ago looked on as an idea altogether chimerical. What would have happened, if some investigating minds had not taken this hypothesis into consideration? The urea would not have been found in the blood, after the removal of the kidneys; and science would not possess a fact as yet less important for itself as for the road it has thrown open to research.

* The following observations on the nature of tubercle are taken from Dr. Hope's valuable work entitled "Principles and Illustrations of Morbid Anatomy." "The physical characters of tubercle are the following: it is a body of a yellowish white colour, of variable size and form, but most commonly roundish. It is hard, but friable, in its first stage. It afterwards softens and changes into a matter composed of tender curd-like fragments suspended in a sero-purulent liquid. Once broken up, tubercle tends to be eliminated, and when this has taken place, there remains, instead of the tubercle, an ulcerated cavity, which sometimes enlarges in all directions, sometimes remains unchanged for an indefinite period, and sometimes heals, either by cicatrisation or by the conversion of its interior into a healthy surface. Andral dates the existence of tubercle from the time when it presents itself in the *solid form* (Precis, i. 413); for though it is very probable that, at the moment of its deposition, it is in a liquid state, the fact has not yet been sufficiently demonstrated: and it is certain that, however small the tubercle, it is most frequently in the solid state that it is found. Certain theories date the existence of tubercle from an earlier period. Thus Dr. Baron and M. Dupuy suppose that it commences as a transparent vesicle or hydatid. Observation has demonstrated the inaccuracy of this opinion, and shown that the vesicles in question are only accidentally coincident with tubercles, and are rarely seen in the human species. (Precis, i. 408.)

According to another theory, that of Laennec, tubercle commences as a grey and semi-transparent granulation; in the centre of which an opaque yellowish white point is sooner or

CHAPTER II.

SYMPTOMS OF PULMONARY PHTHISIS.

9. These may be divided into those which mark the onset of the disease, and those which appear during its progress.

ARTICLE I.

SYMPTOMS WHICH MARK THE ONSET OF PULMONARY PHTHISIS.

10. The study of the various ways in which pulmonary phthisis commences should be considered as very important, since it is principally during the first period of the disease, when we can as yet rather dread its attack than affirm its existence, that it may be either prevented, or even arrested in its progress.

11. Before the signs which announce the existence of pulmonary tubercles are observed, we may remark most ordinarily, though with variable degrees of frequency, first, a simple inflammation of the mucous membrane of the air passages; secondly, one or more attacks of hemoptysis; thirdly, an inflammation of the pulmonary parenchyma or of the pleuræ. We shall speak of these different affections in their turn, so far as they are connected with what might be called the precursors of phthisis.

later developed; and this, gradually extending, eventually pervades the whole. Before the yellow transformation has taken place, the tubercle is called *miliary* by Laennec; when turned yellow, it is his *yellow crude tubercle (tubercle jaune crue,* or simply *tubercle cru).* Laennec's view of the incipient state of tubercles embraces the *pulmonary granulations* of Bayle, which he, and also Louis, consider to be merely tubercles in the grey semi-transparent condition. Laennec accordingly designates them *miliary tuberculous granulations.* Andral, however, describes these as nothing more than partial peripneumony, or an inflammatory thickening and consolidation of individual air-vesicles. Although these small bodies may, like other forms of peripneumony, like false membranous granulations on serous surfaces, like hypertrophous mucous follicles, &c., suppurate, and thus give birth to tuberculous matter, presenting the appearance, as described by Laennec, of a central opaque yellowish spot; yet Andral denies that grey semi-transparent granulations are constantly and necessarily the origin of every tubercle. Were it so, the granulations should be found in all other situations where tubercle presents itself, which is not the case. (Precis, i. 411.) Cruveilhier believes that he has detected tubercles in the liquid or purulent state, having, after the injection of mercury into the veins, and its deposition in the lungs, found liquid purulent productions in the vicinity of others that were white and hard. This experiment, however, is not conclusive, as it is impossible to say how much of the effect is accidental. Leaving this controverted subject, we proceed to the consideration of tubercle, when it continues a solid, yellowish, white body, opaque, friable, and without a vestige of organisation or texture.

"When in this state, a tubercle, not larger than a pin's head, may increase in magnitude to the size of an orange. How is this increase effected? According to Laennec, by intus-susception. But this process can only take place in a living organised body, which tubercle is not. It can only, therefore, augment in the same manner as inorganic bodies, namely, by juxta-position. . . . .

"Tubercle may remain in the solid state hitherto described for a time, varying from a few weeks to a number of years. According to my observation, tubercle, infiltrated in large conglomerate masses, soon softens, since it is in general connected with a highly tuberculous or scrofulous diathesis; whereas isolated round tubercles, especially if not numerous, are those which remain the longest indolent.

"The final transformations which solid tubercle undergoes are of two kinds:—1. Cretaceous induration; 2. Softening by suppuration.

12. Inflammation of the mucous membrane of the air passages, without complication of inflammation of the pulmonary parenchyma, *which may be appreciable by percussion, auscultation, and the sputa*, is certainly the affection most frequently observed in individuals who are subsequently to present signs of pulmonary phthisis. Considered with respect to its seat, its intensity, its duration, and its symptoms, this inflammation of the bronchi presents several varieties which it is important to study.

If we consider it first with respect to its seat, we shall see that inflammation of the air passages, the symptoms of which precede those of tubercles, has not always its commencement in the small bronchial ramifications, or even in the large bronchi. Far from it, we have seen it more than once commence at the upper part of the air-tube, and, for example, consist at first merely in simple laryngitis. The individuals who are in this case, and who must be distinguished from those in whom the laryngitis supervenes only at a more or less advanced period of pulmonary phthisis, have as yet presented no species of symptom which can reveal in them the existence of any affection whatever of the lung, when they become affected with an angina, which at first seems not at all serious. However, the voice remains hoarse; the larynx is the seat of a feeling of constriction rather than of real pain; after some time the cough returns in fits, which are more distressing; the painful sensation, first limited to the larynx, extends successively to

---

"1. *Cretaceous induration.*—This change consists in an absorption of the animal matter, and an augmented secretion of the calcareous. . . . .

"2. *Softening by suppuration.*—Dr. Lombard, of Geneva, was the first to supply a rational theory of the process of softening, in an excellent essay on tubercles. The cause of the softening, according to him, resides no more than that of its increment in the tubercle itself. Each tubercular molecule, acting like a foreign body on the tissues with which it is in contact, occasions in every point of those tissues a secretion of pus, which *mechanically* effects the division of the tubercle into more or less numerous parts or fragments. Softening then is nothing more than the separation or disintegration of the tubercular molecules by pus, and the final result of the process is, as in the case of a foreign body, the expulsion of the tubercle. (Precis, i. 415.) Though the softening of the tubercle most frequently commences in the centre, this is not universally the case, as has been imagined: if the tubercle be very small it commences at the circumference. By softening a cavity is formed, called a *vomica* or *cavern.*"

"A tubercular excavation may heal, and the patient recover from consumption." (Laennec Traité de l'Auscult., i. 580.)

"The healing takes place in three ways:—1. By the surface of the cavity becoming a healthy membrane, the cavity itself remaining open. The healing process takes place as follows:—The surface of the cavity secretes a fibrinous matter, which by organisation becomes a fibro-cellular membrane. This arrests the further progress of ulceration, and, instead of pus, exhales a clear sero-mucous fluid. The fibrous portion of the membrane next thickens and tends to become cartilaginous, while the cellular portion assumes the character of a mucous membrane, and becomes continuous with that of the bronchi. 2. The second mode in which healing takes place, is by the agglutination of the walls when in the healthy condition above described, the result being a thin white fibro-cellular line, in which large bronchial tubes are found to terminate abruptly. 3. The third mode is by the fibro-cartilaginous walls gradually increasing in thickness till they fill up the cavity. The cavities left by the contraction of cretaceous tubercles very frequently become healthy, and sometimes undergo obliteration by closing on the concretions.

"It is very questionable whether tubercles can be absorbed previous to softening. Andral, judging from certain morbid appearances, is inclined to admit the bare possibility of the occurrence (Precis, ii. 545); but the majority, including Laennec, are of the opposite opinion. . . . . . . The pulmonary substance around tubercles may be healthy, indurated, or emphysematous. It is not unfrequently healthy while the tubercles are solid; but when they soften and form cavities it usually degenerates. The change consists in a thickening and condensation of the vesicular walls, rendering the structure impervious to air. It presents a compact greyish, semi-cartilaginous appearance. In other parts the lung is infiltrated with a gelatiniform matter, rendering it impervious, though causing a less degree of induration. The higher degree of induration Laennec has described under the designation of *grey tubercular infiltration;* while the jelly-like appearance he has denominated *gelatiniform tubercular infiltration.*"—TRANS.

the trachea and bronchi ; each fit of coughing causes a disagreeable feeling of pricking, an annoying sense of heat, sometimes even a real pain behind the sternum : here we may follow, in a manner, step by step the progress of the inflammation, which is successively propagated from the organs of deglutition and the voice to the trachea, bronchi, and to their ramifications. It is only then the disease assumes a more serious character : the circulation becomes disturbed ; nutrition begins to become altered, and very soon there can be no longer any doubt but that tubercles exist in the pulmonary parenchyma.

By attentively observing this succession of phenomena, one is led to consider that, in similar cases, the production of tubercles is consecutive on the inflammation which has attacked the mucous membrane of the larynx, trachea, and bronchi.

In other individuals the inflammation does not follow this descending course ; the larynx remains healthy, and there is observed but a simple bronchitis. The latter, no more than the laryngitis just mentioned, is at first not accompanied by any serious symptom ; but after it has continued for a shorter or longer time, whether suitable treatment may have been employed, or, as is too often the case, the disease has resisted the most judicious treatment, the breathing, which till then was free, becomes embarrassed, a slight febrile disturbance is set up, the patient's flesh declines, and everything announces the existence of pulmonary tubercles. Here again the tubercles appear to be developed only consecutively to the bronchitis. But what must never be lost sight of is this, that in order that inflammation of the mucous membrane of the air-passages shall be followed by the production of pulmonary tubercles, it is necessary to admit a predisposition. This being admitted, it will be easily conceived, why in some a very slight bronchitis is sufficient to produce tubercles, whilst other individuals do not become phthisical after the most inveterate and intense pulmonary catarrh. In what this predisposition consists we do not at all know ; we only know that it is more marked under the influence of a certain number of conditions, such as youth, the constitution called scrofulous, residence in damp situations, habitual removal from the rays of the sun, &c. It is, in fact, when one or several of these conditions exist, that we see pulmonary tubercles succeed a bronchitis most frequently and most readily ; by which we do not mean to say, that sometimes also, and always consecutively to a bronchitis, tubercles may not attack a lung in conditions diametrically opposite to the preceding. Thus, for example, we have met the case of an old man, sixty-eight years of age, who, during the course of his life, had been more than once affected with rather severe attacks of bronchitis, which all terminated very favourably. This person had enjoyed good health up to the age of sixty-six. He was then attacked with a cold, which though at first slight, soon assumed an unusual degree of severity ; about one year after this attack, he presented all the symptoms of confirmed phthisis, and after being some months in the La Charité, he died in the last degree of marasmus. The post mortem proved the existence of numerous tubercles in both lungs. Thus, in this individual, the predisposition to tubercles, which did not at all exist during youth, did not develope itself till the period when this predisposition most usually ceases to exist.

It is not always after a first or second bronchitis that the symptoms of pulmonary phthisis are seen to develope themselves. There are individuals who, during a long space of time, often even for several years, contract bronchitis very readily. In them, one of these inflammations scarcely terminates, when, under the influence of the slightest cause, another recommences. These persons, thus subject to *catch cold* for a longer or shorter time, should be divided into two classes with respect to the symptoms which accompany their cold, or which remain in the interval. In the first class we place those who, notwithstanding the frequent attacks of bronchitis with which they are affected, still retain an excellent state of health: above all, their breathing is not impeded, nor is their nutrition altered. However, a period arrives when a new bronchitis sets in, more severe and of longer continuance than those which preceded; then, for the first time, the health begins to become deranged; the bronchial inflammation is indefinitely prolonged, and after some time all the symptoms of pulmonary phthisis are seen to appear.

In a second class, very distinct from the preceding, we must rank those persons who, subject as the foregoing to contract bronchitis very readily, differ from them very strikingly in their habitual state of health: they have what is called *a delicate constitution.* The least excess fatigues and makes them ill; they usually have very great nervous susceptibility; their pulse is often frequent, without however the temperature of the skin being at the same time raised, except in the palm of the hand, which is hotter than it should be in the normal state. Their breathing appears free when they are at rest and do not speak, and several even assert that they feel no dyspnœa; but should they speak with a loud voice, or keep up an animated conversation, they are soon observed *to be out of breath;* the same happens, if they walk quick, or ascend an inclined plane. It is remarkable that this difficulty of breathing, so easily perceived by an attentive observer, seems not to be so to a great number of the patients themselves, whether custom has rendered it imperceptible to them, or that they strive to conceal even from themselves a symptom which might alarm them: how many patients are in this latter case? Others more attentive, or more alive to the matter, complain of a greater or less difficulty of breathing, either of a continued or intermittent form, and are considered asthmatic. In fine, in all there is observed a state of emaciation, which indicates the suffering of some organ more or less important to life. However, several persons remain in this delicate state for several years; they do not suspend their ordinary occupations; they are not yet decidedly ill; they are as yet only on the threshold of phthisis. We have seen individuals who have remained in this sort of intermediate state, between health and disease, from infancy to the age of thirty or forty; then their health became decidedly impaired, new symptoms set in, and they died phthisical.

At what period did the tubercles commence to develope themselves in the two classes of persons just mentioned? In the former, it is very probable that several attacks of bronchitis succeeded each other before the existence of tubercles. In the second, on the contrary, they seem to have been developed at an early period, and it is to their presence in the lung that we must refer the severe symptoms, which became exasperated at the return of each bronchitis, and which were only mitigated, without disappearing, in the interval between each cold. But these tubercles are not numerous; they increase but slowly, and many years may elapse between the first period of their formation and the period when they shall be sufficiently numerous and sufficiently large to change a mere delicate state of health into a real disease.

In several of the cases which we have passed in review, we have been able to convince ourselves that the pulmonary tubercles were not developed till after an inflammation of the mucous membrane of the air passages, and that they were really the product of this inflammation. But in the last case just mentioned, the question of the origin of tubercles is not so easily solved, and it may be asked whether the attacks of bronchitis, so readily contracted by several individuals, far from causing the tubercles, are not an effect of them; may they not act in the lung as foreign bodies, which by their presence might sympathetically irritate the bronchial mucous membrane? It must be acknowledged that here the precise commencement is very difficult to be ascertained. However, if in a great number of cases it cannot be doubted that the development of tubercles in the lung is consecutive on a bronchitis, either simple, as we have already seen, or complicated with hemorrhage, or inflammation of the parenchyma, as we shall see presently, analogy should incline us to admit, that in the case where we see a bronchitis and tubercles exist simultaneously, without its being possible to decide which of these two affections preceded the other, it is, as in the other cases, the inflammation of the bronchi which has produced the tubercles. A case which would certainly militate considerably against this mode of viewing the matter, would be that wherein there should be found tubercles still crude, and few in number in the lung of an individual, who, during life, had never coughed; but that a case of this kind may be available, it would be necessary that it should not only be proved that the individual did not cough a few months before death, but again, that it should be proved that he had never had a cold from the moment of his birth. Now, I do not yet know any case of this kind. We may very well conceive, that after the more or less prompt cessation of the bronchitis which has caused the formation of some tubercles, these may remain for an indefinite time stationary. In the hypothesis, on the contrary, in which it is admitted that tubercles exist previous to bronchitis and are the cause of it, it would be more difficult to conceive how tubercles could thus arise and become developed without producing some irritation of the bronchi, and consequently some cough*.

* On the opinion here given by M. Andral with respect to bronchitis being so general and influential a cause of pulmonary phthisis, we shall offer a few remarks, and in doing so shall take a cursory view of the opinions of the most distinguished pathologists on this very important subject. Two exclusive opinions divide medical men at present with respect to the causes of phthisis. Some, struck with the immense influence which general causes exercise in the production of this disease—namely, age, sex, temperament, hereditary transmission, &c., have either entirely overlooked the influence of local irritants in its production, or have considered such influence as of very secondary importance, and have accordingly altogether denied, or nearly so, that inflammation ever takes any part in causing the disease. Others, on the contrary, confining their attention too exclusively to local causes, to those which act directly on the lungs, and almost entirely overlooking those which affect the general system, have exaggerated the importance of irritation in phthisis, and have made inflammation the principal and almost sole agent in the development of tubercles. According to the former, phthisis is an *asthenic*, according to the latter, an *inflammatory* disease. At the head of those who advocate the first opinion may be placed Bayle, Laennec, Chomel, and Louis. These pathologists will have it that irritation and inflammation have seldom anything to do with the development of tubercles. To this opinion it has been objected that, according to such a theory, it is impossible to account for the concentration of tubercles in the lungs, and their predilection in a manner for these organs at a certain age. It is not easy to conceive how a constitutional disease, diffused through the entire system, can localise its effects on some one part, without the intervention of some determining cause, which cause, being admitted, must consist in an increase of the vitality of the organ, or, in other words, in its irritation. Thus we see cerebral tubercles very frequent in infancy, a period when the brain becomes the seat of a number of varied sensations, and consequently a centre of great and continued action; we observe scrofula to come on towards the seventh or eighth year, the period of second dentition, which keeps up a state of prolonged excitement around the jaws and neck; pulmonary tubercles are seen to develope themselves in the adult period of life, when the chest begins to increase and expand, and when there is an additional increase of vitality in the respiratory organs. If irritation, then, or an increase of vitality in the lungs, be necessary to localise in them the process of tuberculisation, it may be conceived that, when inflammation is developed in them, it may, *a fortiori*, determine this concentration; but irritation is, as we have seen, indispensable to the occurrence of this process, and inflammation is not; numerous facts prove that tubercles may be developed without catarrh, pneumonia, or pleuritis. It would be, however, shutting our eyes to all evidence to deny that inflammation has any share in the development of tubercles: we often observe phthisis to declare itself after repeated attacks of bronchitis and pneumonia, in individuals who, before the first attack of these inflammations, enjoyed perfect health, and who evinced none of the external signs which announce predisposition to phthisis. We find the mucous membrane of the bronchi often inflamed in phthisical subjects, even when the tuberculous matter is not softened, and when, therefore, it cannot be said to have irritated the bronchi by contact with them. The influence of inflammation must also be admitted, by analogy with what takes place in the brain, liver, glands of the mesentery, within which all observers acknowledge that tubercles are developed under the influence of inflammation of the cerebral tissue, of the liver, or the intestinal mucous membrane. It being now evident that inflammation of the lung may give rise to tubercles in it, we shall next consider whether it is their exclusive cause.

Let us not forget also, that, with respect to the symptoms, the partial engorgements of the pulmonary lobules (vesicular pneumonia), which we have already described, and in the centre of which we have seen tubercles arise, can very seldom be distinguished from simple bronchitis.

13. Profuse hemoptysis may take place at different periods of pulmonary phthisis; on this matter we shall speak more in detail at a future period. The species of hemoptysis which alone should engage our attention at present, is that which in several persons marks in some measure the commencement of phthisis. Whilst symptomatic of the existence of tubercles in a great number of cases, here, on the contrary, it seems to precede their formation; this was clearly seen by Morton, who designated one of his species of phthisis by the name of *phthisis ab hemoptoe.*

M. Broussais is at the head of those who assert that inflammation performs the chief part in the production of tubercles. According to him these small bodies are formed by the chronic inflammation of the lymphatic glands of the lung. MM. Bouillaud and Cruveilhier adopt nearly the same opinion. M. Andral coincides with them, except that he substitutes sanguineous congestion or *hyperemia* for inflammation. This theory, however, is as imperfect as the preceding. It is beyond all dispute that pneumonia, pleuritis, and, above all, bronchitis can occasion the development of tubercles; it cannot be denied that they are formed very often without the intervention of these inflammations. In the first place, the facts which point out nascent tubercles scattered through a lung in a state of chronic inflammation, or developed beneath an inflamed pleura, are very rare; they are in some measure exceptional, and cannot serve as a basis to a general rule. They probably prove but a simple coincidence of the two lesions; commencing tubercles in the lung will not bring exemption from pneumonia. With respect to bronchitis, it is also often wanting, particularly at the commencement of phthisis, a period when it should be almost always constant, if it were true that tubercles can be but seldom developed without its intervention. We often, in fact, see patients cough at this period for a length of time without any expectoration, or any râle, and consequently without any signs of catarrh. In these cases inflammation evidently has nothing to do with the production of tubercles. The consideration of what takes place in the external parts of the body will also satisfy us that inflammation is not essential to the formation of tubercle. We every day see tuberculous masses developed in the necks of children without having been preceded by any inflammatory symptom, solely under the influence of cold and moisture, bad food, or vitiated air. In a word, will any one attempt to assert, that those persons whose bodies present at one and the same time tubercles in the brain, cerebellum, neck, both lungs, mesentery and spleen, a case of which is given by M. Louis, and those tubercles in nearly the same state of development, which proves that they were formed at nearly the same time,—will any one attempt to say that these persons were attacked with inflammation in all these parts at once, when scarcely any signs of excitement were observable during life?

The consequence to be deduced from these facts, is, that the development of pulmonary tubercles requires the concurrence of two orders of causes, the one constitutional, and the other local. The former modify the general nutrition of the individuals, impoverish the blood by increasing the proportion of its serum, and diminishing the quantity of its red globules. The latter have but a limited, local, and superficial action, compared with the former. Without the former it is scarcely possible that the blood should undergo that alteration which contains, as one may say, the germs of tubercle. Without the second, tuberculisation may not develope itself; it cannot become localised: but we can conceive a state, in which this alteration of the blood, and the vitiated nutrition resulting from it, are so very considerable, and this fluid so saturated with tuberculous matter, that the slightest cause of pulmonary irritation, the mere diminution of the natural heat of the skin, which increases temporarily the perspiratory action of the lung, the mere normal excitement which the lungs undergo during their increase at the period of youth, or in adult age, is sufficient to develope in this organ the process of tuberculisation; and it is in this way that those cases of phthisis arise and may be explained, which seem to be developed without any cause of irritation. What has been here said is equally applicable to the etiology of tubercles of the brain, subcutaneous tubercles, or scrofulous tumours and mesenteric tubercles.

Thus then the nature of phthisis is neither asthenic nor inflammatory. If a choice were to be made between both, the former, imperfect as it is, deserves the preference. But we can penetrate more deeply into the intimate essence of the disease, and establish a theory of it more comprehensive and more accurate. From what has been said of its causes, the nature of phthisis is composed of several elements. It consists in an alteration of the blood, in the deposition or secretion of the product of this alteration into the pulmonary parenchyma, in a vitiated nutrition of all the tissues, in the irritation which excites the concentration of the

Among the phthisical patients observed at La Charité, several told us that their disease commenced in the following manner:—They had always enjoyed good health; their constitution was strong; they had no cough previous to their hemoptysis; all on a sudden, in the midst of a state of health very good up to that period, they were seized with a profuse spitting of blood; this ceased at the end of a shorter or longer time, and all the symptoms of phthisis gradually declared themselves. In other individuals, this first hemoptysis, which came on under the same circumstances, was not followed by such bad consequences; after the cessation of the spitting of blood, the cough did not continue, and they returned nearly to their former state of health; but at the end of a longer or shorter time, and always without being preceded by any cold, a second, then a third hemoptysis came on; and at length, after one of these reiterated attacks of hemoptysis, the cough continued, and the patient fell into phthisis.

Should we admit, in the cases just mentioned, that before the hemoptysis manifested itself, tubercles already existed in the lungs in the latent state? It is with difficulty I can conceive, I own, how tubercles which are considered to possess

---

tuberculous matter within the lungs, finally in the inflammation which tubercles excite around them, or which, in consequence of the great irritability of the lungs, occasioned by their presence, is readily set up under the influence of the slightest cause. The alteration of the blood and of nutrition is proved, first, by the nature of the causes which produce phthisis, which, being chronic and slow, and for the most part without any direct action on the lung, act evidently on the entire system in general, and principally on the blood, the first agent of nutrition, and consequently the ordinary commencement of the modifications which deteriorate, as well as of those which strengthen it; secondly, by the serous state of this liquid, in the menses of women who are at the commencement of phthisis; thirdly, by the diminution of its entire mass, as ascertained by Lieutaud, Bartholin, and Portal; fourthly, by the emaciation, as well as the remarkable discoloration of the skin, the loss of strength, and general feeling of illness, which often precede for a considerable time the appearance of every symptom of phthisis, symptoms which should be referred rather to a constitutional modification, than to the formation of tubercles, whose presence does not even yet excite a single sign of local irritation; fifthly, by the simultaneous development of a great number of tubercles in several organs at one and the same time, whether it may have commenced in the lung, or in the lymphatic ganglions of the neck, or those of the mesentery, a circumstance which can neither be accounted for by sympathy, since tubercles are seen at the same time in organs bearing no resemblance to each other either in texture or function, such as the mesenteric ganglions and the lungs, nor on the principle of absorption, since tubercles are found in several organs, all in the crude state. With respect to the nature of the change in the blood, it is conformable to the nature of the causes which produce it, which uniformly have the effect of increasing the proportion of the serum of the blood, and diminishing the quantity of its red globules and its exciting properties, as also to the organisation which predisposes to it; that, for instance, of women, children, and all lymphatic persons, an organisation one of the principal characters of which consists in a blood which is too serous, extremely poor, and very deficient in red globules; the nature of this alteration is such also as may be expected from the analysis of tubercles, which are seen to consist of substances all found in the serum of blood, namely, chloride of sodium, phosphate and carbonate of lime, oxide of iron, and animal matter constituted in a great measure of albumen. The necessary result of this alteration of the blood is an imperfect nutrition of all the tissues which constitute the second element of the disease. The third element, consisting in the deposition or secretion of tuberculous matter within the pulmonary parenchyma, is so palpable as not to require demonstration. Some irritation of the lung, however inconsiderable, has been already insisted on as indispensable to determine the concentration of the tuberculous matter in this organ; without it, in fact, the process of tuberculisation might as well take place in any other part, and so give rise, for instance, to disease of the mesentery, or scrofula. This may be considered as a fourth element in the disease. The existence of inflammation either of the bronchi or pulmonary parenchyma, in phthisis, which has been proved as well by the symptoms as by post mortem examination, is admitted by every one. Thus then an alteration of the blood and of nutrition, foreign bodies scattered through the pulmonary tissue, irritation and inflammation of this tissue are the essential elements of phthisis. We may observe, in passing, that the nature of this change in the blood is diametrically opposite to that observed in gout, the blood of gouty persons being too rich, too much animalised, and too stimulating. Thus also these two diseases, phthisis and gout, seem in a manner to repel each other. (See Dictionnaire de Médecine et de Chirurgie Pratique, vol. ix., Article *Phthisie*, from which the substance of this note has been taken.)—Trans.

the power of irritating the pulmonary parenchyma or bronchi sufficiently to produce profuse hemoptysis, could, before the appearance of this hemoptysis, exist for a long time without so much as producing even a slight cough. I can very well understand, on the contrary, that under the influence of causes more or less appreciable, some portions of the lung become the seat of a sanguineous congestion (pulmonary apoplexy of Laennec), whence results the production of hemoptysis. If this congestion continues in one or more portions of the lung, and if at the same time the person is predisposed to tubercles, the latter will be very easily produced, and will multiply with rapidity in the midst of a part, whose nutrition has been modified in consequence of the pathological process which is set up there. This succession of phenomena being admitted, it may be understood how frequently an hemoptysis may be followed by all the symptoms of pulmonary phthisis; but it may be also understood how by the aid of proper treatment one may hope to prevent this fatal termination: it may be understood, in a word, how this termination does not take place when the predisposition does not exist. Many persons have, in fact, had one or more attacks of hemoptysis in the course of their life, and yet have not become phthisical.

Not only the examination of the symptoms should lead one to consider a certain number of hemoptyses, or rather the organic lesion producing them, as the cause and not the effect of pulmonary tubercles; but, moreover, post mortem examination supplies some facts in favour of this mode of viewing the matter: we shall cite the following:—

CASE 3.—*Tubercles arising in the midst of a portion of lung struck with apoplexy.*

A man, labouring under chronic peritonitis, was in the hospital for nearly two months, and had not yet presented any morbid phenomenon on the part of the organs of respiration; he had no cough, and his breathing was free. One morning we found his spitting vessel full of vermilion frothy blood, which he had expectorated during the night (the preceding evening he felt for the first time some dyspnœa). The fifteen days following the hemoptysis continued very profuse, it then gradually diminished, and ultimately ceased; but the patient continued to cough, and to breathe with difficulty. Some time after the spitting of blood reappeared; the patient now, exhausted by his chronic peritonitis, soon sunk. The post mortem showed in the right lung the existence of brownish red masses accurately circumscribed, constituting the lesion described by Laennec under the name of *pulmonary apoplexy*. One of these masses was strewed over with a considerable number of granulations of a yellowish white, presenting all the characters of miliary tubercles in the nascent state. Others consisted of a more liquid matter, resembling a drop of pus. In two other apoplectic masses there was merely a much smaller number of these white grains: in others, none at all were perceived. In the remaining parts of the two lungs no trace of tubercles was discovered; but a great quantity of them existed in the substance of the false membranes of the peritoneum.

In this case, do we not in a manner witness the birth of tubercles in the lung? It was not they which caused the partial sanguineous engorgements seated in the right lung, since in most of these engorgements there was found no trace of tubercle. On the other hand, their existence seemed connected with these engorgements, since they were found only in the centre of some of the latter. The formation of tubercles was here then consecutive on the pulmonary sanguineous congestion. They were developed in that part of the lung where there existed an excess of vitality, precisely as they arose in the substance of the peritoneum in a state of chronic inflammation.

The circumscribed sanguineous engorgements of the lung, more or less similar to sanguineous infiltration of the brain so well described by M. Lallemand, are a lesion common enough in the horse. Now we have several times found in this animal, in the centre of these pulmonary engorgements, tubercles more or less numerous, such as those found in the individual whose case has been just now given; and what proves that in the horse also the formation of tubercles is consecutive, at least in several cases, on the formation of sanguineous engorgement, is that in the same lung we found several of these engorgements studded with tubercles, and others exempt from them.

It is generally admitted that hemoptysis is followed by the formation of pulmonary tubercles in weak, delicate persons, who exhibit the different attributes of the lymphatic temperament, who are disposed to scrofula, or whose chest is badly formed. This rule is far from being without exception. We have more than once seen pulmonary tubercles manifest their existence after an hemoptysis in persons apparently of a very strong constitution, having a brown skin, black hair, and whose muscular system was very well developed. Among other cases of this kind we shall cite that of a medical student, who was of a really athletic make. Having recently arrived at Paris, he devoted himself with ardour, during a severe winter, to the labour of the dissecting room, and gave up a considerable portion of the night to study. Till then he had enjoyed perfectly good health; to use his own words, he *did not even remember ever to have had a cold.* After two months' residence in Paris, he began to feel a little dyspnœa, which was attributed to a local plethora of the lungs. Towards the third month, this slight dyspnœa continuing, and without having yet had any cough, this young man was suddenly seized with a profuse spitting of blood. The hemoptysis soon ceased, but it was succeeded by a dry and very painful cough; emaciation went on rapidly, and acute phthisis terminated the life of this young man, though his constitution seemed to be such as should have preserved him from that disease.

14. There is another class of patients in whom the first origin of pulmonary tubercles does not go back, as in the preceding cases, either to a simple bronchitis, or to an hemoptysis. In them the phthisis declared itself after a pleuro-pneumonia. We have already mentioned some cases of this kind in a preceding part of the work. But an important distinction should be here laid down: in several of these patients every thing seems to announce that tubercles existed already in the lungs before the attack of pneumonia; but these tubercles, being but few in number, and making but very slow progress, occasioned but very slight symptoms. The habitual cough, slight oppression, and emaciation could only make one dread their existence. Besides, the patients did not keep the bed, they continued to attend to their usual occupations; in this state an inflammation more or less acute lays hold of the pulmonary parenchyma; it exercises almost necessarily the most mischievous influence on the tubercles; it favours their increase, accelerates their softening; so that, during the convalescence from the pneumonia, phthisis, which till then was only suspected, becomes manifest, and brings the patient to the grave more or less rapidly.

In other individuals, every thing announced a perfectly healthy state of the lungs, when they were attacked with pleuro-pneumonia. The symptoms of the latter are seen gradually to improve and disappear; the patient now seems convalescent. But if he be closely examined, it will be observed that his strength does not return; that his flesh, far from being restored, only diminishes more and more; the cough continues dry or accompanied with a catarrhal expectoration. Deep inspirations are now difficult; the patient, to use his own words, is easily put out of breath. However in a considerable number of cases the dull sound has disappeared, the respiratory murmur has nearly returned to its natural state. Where then shall we find the cause of the patient's pining away, and of that aggregate of symptoms which announce the lung to be seriously affected? This cause we shall find in the development of tubercles, which, at first more or less completely latent, are indicated by signs more and more characteristic, according as their number increases. Here again is a case where the formation of tubercles succeeds beyond all doubt to an inflammatory process. Besides, in these patients it is remarkable that the development of tubercles does not impede the resolution of the inflammation of the parenchyma, as is proved by percussion and auscultation. It may only be suspected that the tubercles are commencing in a certain number of points, where the inflammatory engorgement continues. But there are other patients in whom no resolution of the pneumonic inflammation takes place; it passes into the chronic state; then the sound continues dull; the respiratory murmur continues altogether absent, or is succeeded either by bronchial respiration, or by different râles; and it is in the midst of the indurated pulmonary parenchyma that the tubercles are developed.

From this circumstance, that during life no sign announced the existence of pneumonia in an individual whose lungs contain tubercles, must we conclude that the latter are developed in the midst of a tissue exempt from all inflammation? Before answering this question, let us refer to those circumscribed lobular or vesicular pneumonias, which we have already noticed several times, and one of the varieties of which constitutes the granular phthisis of Bayle; let us remember how obscure very often, and impossible it is to obtain the diagnosis of these partial inflammations. So that tubercles may be developed in portions of lungs thus separately inflamed. It is not these tubercles then, which, by their presence, always cause the inflammations which exists around them; for close by those lobular inflammations with formation of tubercles, there are other points equally inflamed, where no trace of this morbid production is to be found, as may be seen in the following case.

Case 4.—*Symptoms of simple chronic inflammation of the gastro-pulmonary mucous membrane—Partial pneumonias with development of tubercles in the midst of them.*

A laceman, twenty years of age, presented the symptoms of a double chronic inflammation of the peritoneum and gastro-intestinal mucous membrane, when he entered the hospital. In addition to this, during the last six weeks of his remaining in the hospital, he coughed, and expectorated daily a considerable quantity of greenish opaque mucus (the sputa of chronic bronchitis). The chest on percussion sounded well in every part; in every part also the respiratory murmur was distinctly heard, or at most with a bronchial râle at intervals; the breathing did not appear much impeded, there was no hemoptysis; the hectic fever and all its attendant symptoms must naturally be referred to the abdominal affection, so that the cough appeared to have been occasioned solely by simple chronic inflammation of the bronchi. The patient, who was now in the last stage of marasmus, became gradually exhausted, and died without a struggle.

At the post mortem examination, the intestines were found united together by blackish false membranes studded with numerous tubercles. The mucous membrane of the cæcum was red and softened. The lungs presented, in several points of their extent, portions of their parenchyma in a state of red softening (ramollissement rouge), which were so much the more apparent, as the pulmonary tissue surrounding them was of a yellow white colour, and not at all engorged. Only one of these inflamed masses might have been capable of containing two nuts (this was the largest); the others, on an average, equalled the size of a small nut. But what these partial pneumonias presented particularly remarkable was this: several of them were studded with small reddish granulations, which might be easily taken for small lymphatic ganglions, by reason of their colour, form, and consistence*. In other portions, equally red and friable, these bodies were replaced by granulations, which were either greyish throughout, or of a dull white in one or several points of their extent, but indifferently so in their centre or at their circumference. In other masses, which were also in a state of red hepatisation, some tubercles were seen, in some degree better formed, and larger, of a rounded or oblong shape. *Elsewhere there were found portions of lung inflamed as the preceding, but which differed from them in this, that they presented no appearance of tuberculous matter in either of the degrees just now alluded to.*

---

* They were evidently, as we have already mentioned, portions of parenchyma more engorged than those surrounding them. Thus, in the midst of the inflamed cellular tissue, knobs or pimples (bourgeons) are often seen, which project above a surface uniformly red, and which consist, like the latter, of mere cellular tissue, which is only more engorged and harder.

Where there was no pneumonia, no tubercle was found, except in one single point, where, in the midst of a very healthy tissue, three or four miliary tubercles were observed collected together. The bronchial ganglions were very large and tuberculated.

We have several times found in the lungs of horses these partial pneumonias, with development of tubercles in different states in the centre of some, and total absence of this accidental production in others. We concluded here, as in the human subject, that the deposition of tuberculous matter in the lung had not preceded the numerous partial inflammations presented by this viscus.

15. Shall we here allude to the numerous cases in which tubercles coming to attack the pulmonary parenchyma, during the course or towards the decline of other diseases not connected with the respiratory apparatus, the onset of phthisis is very obscure, so that it may be then overlooked for a shorter or longer time? But these cases enter into the preceding, since, eventually, the appearance of the first symptom of phthisis always succeeded either a simple bronchitis, or a hemoptysis, or a pleuro-pneumonia. Thus we have often seen cases of pulmonary phthisis commence during convalescence from gastro-enteritis. Before the attack of the intestinal inflammation, the patients had no cough, nor was there any symptom to make one apprehend in them the existence of a pulmonary affection. During the course of the abdominal affection, some presented signs of pneumonia, in others there were observed only the symptoms of a simple bronchitis. But when now convalescent, they neither recovered their strength nor flesh, and they continued to cough. The diagnosis of tubercles is then difficult, because the cough, the only local symptom with respect to the chest, is not sufficient to characterise them, and because the absence of strength, and the continuance of the emaciation, are considered as connected with the preceding disease; but while this state continues, it should make us suspect strongly the existence of an organic lesion, and if the cough does not cease, the development of pulmonary tubercles should be dreaded. It is enough to say that this cough should not be neglected, and that we should take care, and not, as is too often done, leave the cure entirely to nature. Persons are then afraid to employ an active antiphlogistic treatment, because, they say, the patient is now weak and exhausted; but this weakness and exhaustion depend principally on the serious alteration in the lungs, and it is only by combating the latter that the patient's strength can be restored. A perfect convalescence is scarcely ever accompanied by this prolonged state of debility, and it is truly remarkable how rapidly both their strength and flesh return to persons who have been a long time kept on strict diet, provided they are no longer affected with disease of any organ.

16. Among the acute exanthemata, there is one in particular after which we often see pulmonary phthisis make its appearance,—that is measles. The reason of this will be readily understood, if we reflect that in measles, much more than in small-pox or scarlatina, the bronchi are the seat of an acute inflammation. This uniformly manifests itself several days before the exanthema appears; if the latter does not come out well, if after having appeared partially or generally, it decays prematurely, the sanguineous congestion, which ceases to take place on the surface of the body, often becomes very severe on the mucous membrane of the air-passages, the bronchitis assumes increasing intensity, and after being prolonged a shorter or longer time, symptoms of pulmonary phthisis appear.

In other patients the measles runs through its usual stages with regularity ; but after it has disappeared at the end of the proper time, the bronchitis which had accompanied it in its course, does not disappear with it ; the lung may become the seat of a congestion sufficient to occasion profuse hemoptysis ; and either after this simple bronchitis indefinitely prolonged, or after the spitting of blood, the lungs become filled with tubercles. We witnessed this mode of the development of phthisis after measles very strikingly marked in M. B., a lecturer in a school in Paris. As I knew this young man a long time before the attack of measles, I was thoroughly satisfied that he presented no symptom which could announce in him the existence of pulmonary tubercles. He had never coughed, nor experienced any dyspnœa ; he delivered very long lectures with a loud voice, without feeling the least fatigue. Measles spread through the establishment in which he resided ; he was attacked with the disease ; this ran through its stages regularly ; during its continuance he was harassed with a distressing cough, which continued after the disappearance of the eruption ; he then felt some oppression, and a vague sensation of heat internally, and of undefinable uneasiness in different parts of the chest ; he then had a copious hemoptysis, which was met, though not checked, by several bleedings ; it ceased at the end of about three weeks ; but the patient continued to cough and waste away, and died in less than a year in the last stage of pulmonary phthisis. This young man had a fine white skin, blue eyes, long eye-lashes, and the cheeks habitually flushed. During the year before the attack of measles, he had suffered considerable mental distress, and his scanty means prevented him from taking sufficient nourishment.

Here, as in several other cases which we might cite, nothing can make us admit that tubercles existed already in the lung before the attack of measles ; no doubt they developed themselves consecutively to a state of inflammation, or at least of congestion of the bronchial mucous membrane, or even of the parenchyma of the lung. But it must also be admitted that at other times the measles, or, more correctly speaking, the bronchitis and pulmonary congestion accompanying it, merely stimulate the process of tuberculisation, of which the lungs were already the seat before the attack of the exanthema. This process was announced by a group of local or general symptoms more or less marked ; but it went on slowly, and as yet had exercised but little influence over nutrition properly so called. Does the measles then supervene ? In several cases it developes itself but imperfectly ; it seems that the old morbid process seated in the lung is opposed to the completion of the new process, which has a tendency to take place on the skin. But from this moment the tubercles become multiplied, they soften rapidly, so that a pulmonary phthisis which had lasted a considerable time, without having produced any alarming symptoms, may thus be suddenly changed into a real acute disease. We shall not then repeat with several writers that acute cutaneous eruptions, and particularly measles, should be considered as exercising an influence often favourable on pulmonary phthisis, by the species of revulsive process which they occasion. I am not aware of any well-attested fact to sanction this view of the matter. I once saw, to be sure, a pleuritic effusion, which was of considerable duration, and which had resisted several means that had been employed, become promptly reabsorbed at the same time that an eruption of small pox took place, but it is clear that the cases are not the same.

17. There are few chronic diseases which, during their progress, may not have been found to be complicated with pulmonary tubercles. The period at which the latter begin to develope themselves is then often very difficult to be ascertained, because the local symptoms may then be reduced to a simple cough which has nothing characteristic, and because, on the other hand, the symptoms of emaciation observed are naturally referred to the primary chronic affection.

18. From all the facts now mentioned it seems to follow that the forms in

which pulmonary phthisis may commence are far from being identical in all individuals. But whatever this commencement may be in other respects, is the primary stage of the formation of tubercles always either an inflammation, properly so called, or an analogous process, which differs from it only in intensity, such as active sanguineous congestion, irritation, &c.? On this matter observation informs us that, in the greater number of cases, simple inflammation of the bronchi, without the pulmonary parenchyma itself appearing to be inflamed to any great extent, so far as inflammation be appreciable either by percussion or auscultation,—observation, I say, informs us that this bronchitis precedes in the majority of cases the appearance of tubercles; that at other times the latter succeed to a pulmonary sanguineous congestion, the symptom of which is a more or less profuse hemoptysis; that in other circumstances, in fine, they are formed consecutively to an inflammation of the parenchyma of the lung itself, to a real pleuro-pneumonia, whether general or lobular. This does not prevent tubercles, when once they are formed under the influence of one or other of these affections, from being able in their turn to reproduce those same affections by the sympathetic irritation occasioned by their presence in the midst of the pulmonary parenchyma. Thus, for instance, as may be easily demonstrated (see the article on the signs furnished by percussion and auscultation), hepatisation of this parenchyma to a considerable distance from the point where the tubercle exists, follows the formation of tubercles more frequently than it precedes it; the same may be said with respect to hemoptysis; and it may be said of each of these phenomena, that it is at once both cause and effect.

19. Finally, are there cases in which it is possible to prove that the formation of pulmonary tubercles has not been preceded by any irritation, congestion, or inflammation, either of the bronchi or pulmonary parenchyma? We have already expressed our opinion regarding the cases in which pulmonary tubercles were stated to have been found in persons who never presented the least irritation connected with the lungs. No doubt it is very possible that several of these persons may never have had either inflammation of the parenchyma of the lung appreciable by the symptoms, nor even intense bronchitis. But are there no latent irritations for the lung, as for all other parenchymatous structures, for the bronchial mucous membrane, as for all other membranous tissues? In how many circumstances, and under the influence of how many causes, do we not see the lung become the seat of very remarkable sanguineous congestions, without these congestions producing in other respects any real morbid state? But in individuals predisposed to the modification of nutrition constituting tubercle, may not these irritations and congestions, however slight in other respects, occasion the secretion of tuberculous matter? Is it not thus that, on the external surface of the body, the development of this matter in the lymphatic ganglions is preceded by engorgement and hypertrophy of these ganglions? Is it not thus, again, that abscesses may form in some persons without having been preceded by any sign of inflammation, so that one ascertains the formation of pus not until the collection already exists under the skin. However, as in the great majority of cases the production of pus is preceded by an evident inflammatory process, surgeons have no hesitation in considering the abscesses now in question as being equally the result of inflammation; the same reasoning may apply to the question of pulmonary tubercles. To recapitulate, I do not think that these tubercles always succeed a real inflammation; but I think it should be admitted that they are produced in a manner most frequently evident, though sometimes latent, by a process which differs from inflammation, properly so called, not in its nature, but in its degree, if I may say so. No doubt, in theory, it is easy to establish a well-marked line of demarcation between what is called active sanguineous congestion and inflammation. But examine the symptoms produced by congestion and inflammation; study the lesions occasioned by them in our organs, and you will be obliged to

own that if, in a certain number of cases, an easy distinction may be established between both, in other cases also this distinction is no longer possible, so that the congestion and inflammation no longer appear to be anything but different degrees of one and the same mode of morbid action.

But if inflammation, or an analogous process, is the cause of tubercles, why does it not produce them in all individuals? This question may be reduced to this: why does inflammation sometimes terminate in induration, sometimes in suppuration, and sometimes in gangrene? Why do inflammations of serous membranes give rise to products which sometimes may be organised, and sometimes present no such appearance? Why do inflammations of mucous membranes produce in one case ulcerations which may extend in breadth or in depth, and in another case vegetations? Why do these same membranes become indurated in some and softened in others, &c.? Certainly we can no more conceive how all these alterations may be the result of an inflammatory process than we can in the case of tubercles. If we interrogate the symptoms, we shall see the signs of inflammation completely wanting for several of these alterations as well as for tubercles; this is the case of a certain number of adhesions of serous membranes, of vegetations and ulcerations of mucous membranes, &c. If, then, observation lead you to admit several species of inflammation, not only with respect to their nature, but also with respect to their results, as was done by Hunter, when he distinguished an adhesive, ulcerative, and suppurative inflammation, the strictest analogy will lead you to admit a species of inflammation, or other process which shall differ from it only in degree, and the result of which shall be the formation of what is called tuberculous matter. (See chap. i. for what has been said on the nature of this matter.)

Here then, as in a number of other cases, we must admit a predisposition, without which tubercles shall not form, whilst, if it exist in a considerable degree, the slightest derangement in the ordinary nutrition of an organ will suffice to produce them*.

What is this predisposition? We can ascertain it in only a certain number of cases.

20. Bad formation of the chest, particularly smallness of the transverse, but, above all, of its antero-posterior diameter, is very much predisposing to phthisis. Numerous cases have proved the accuracy of this remark; it is also easy to explain why, in a narrow chest, pulmonary tubercles must readily be produced. At the period of puberty, in consequence of the relation which connects the development of the genital with that of the respiratory apparatus, the lungs may acquire in a short space of time a considerable increase in volume, and the thoracic parietes should necessarily follow this increase. If this does not take place, if at the same time that the lungs tend to become enlarged, their bony envelope does not acquire a proportionate capacity, the pulmonary vesicles can dilate themselves but imperfectly for the reception of the air; the blood itself will not without some difficulty pass through the different vessels of the lung; the act of hematosis will be performed but incompletely; thence there will first result, as a necessary consequence, an habitual difficulty of breathing, and a disposition to aneurism of the right side of the heart. This difficulty of breathing will become increased, if under the influence of any cause whatever, whether mental emotion, or severe exercise, or bronchial irritation, &c., an increased quantity of blood flows in a given time towards the pulmonary parenchyma. A mechanical cause residing in the narrowness of the chest then prevents a greater dilatation taking place according as a greater quantity of blood comes into the lung. Is it not evident from this,

---

* I already said in a preceding note, that, in my opinion, this derangement of nutrition or secretion may exist and be followed by the formation of tubercles, without having been preceded necessarily by any process of irritation.

that general or partial congestions have a constant tendency to take place in the lung? Thence, the modification of nutrition of this parenchyma, and, should the individual be at all predisposed, the formation of tubercles.

We shall then admit as a fact derived from observation and easily accounted for on physiological principles, that narrowness of the chest, in one or more of its diameters, predisposes to phthisis. This fact has been proved by a thousand observations; but this also must not be forgotten, and it has been equally well ascertained from observation, namely, that pulmonary tubercles often arise in persons with a broad, well-formed chest, and one that is well dilated by strong muscles.

21. To sum up, the facts stated in this article tend to confirm the opinions expressed in the first Chapter; they present to us tubercles always as a product of secretion which is often preceded by a state of hyperemia, infinitely varying with respect to its seat, intensity, and extent. From the varied combinations of these three conditions, it may arise that sometimes the hyperemia which precedes the tuberculous secretion, will be appreciable at once both by the symptoms and the post mortem examination (pulmonary apoplexy, pleuro-pneumonia); that sometimes this hyperemia will be no longer appreciable except by one of these modes of investigation (bronchitis by the symptoms, lobular, vesicular pneumonia, granulations of Bayle, inflammation of the interlobular cellular tissue, by the autopsy); that at other times neither the symptoms nor the autopsy will point out any previous congestion (crude tubercles in the midst of a very healthy parenchyma in persons who died of an affection unconnected with the respiratory apparatus, and in whom no symptom ever announced a morbid state of the lungs or bronchi). Must we then admit that a phenomenon of which the cause is evident in nine cases, is also produced by this same cause in a tenth case, where it is no longer as manifest?

ARTICLE II.

SYMPTOMS WHICH ACCOMPANY PULMONARY TUBERCLES IN THE DIFFERENT STAGES OF THEIR EXISTENCE.

22. The symptoms most commonly observed in phthisical patients may be divided into three classes. In the first are ranged the symptoms which directly depend on the presence of tubercles in different degrees in the pulmonary parenchyma, such as the dyspnœa, cough, mucous, purulent, or bloody expectoration; different signs furnished by percussion and auscultation. In a second class may be placed the symptoms which depend on the sympathetic disturbance which different functions undergo consecutively to the development of pulmonary tubercles, such as fever, marasmus, &c. In fine, a third class includes the symptoms which result from different diseases which may complicate the tuberculous affections of the lung, whether these intercurring diseases may have their seat in the lung itself, or in its appendages, or whether they reside in other organs. We think it right to point out here this threefold distinction; but we shall not be able to confine ourselves to it in the description which we are going to give; it seems to us more important to point out the numerous modifications which one and the same symptom may undergo according to the different morbid conditions of which we have spoken. Thus, for instance, the dyspnœa which results from the sole presence of tubercles in the lung, may be considerably increased by certain complications, such as the intercurrence of pneumonia or pleuritis, or by disease of the heart. Thus the hectic fever which belongs to pulmonary phthisis, may be very much modified in its type, severity, &c., by different affections which may supervene at different stages of the principal disease.

SECTION I.

SIGNS FURNISHED BY PERCUSSION AND AUSCULTATION.

23. Percussion of the thorax is far from giving the same information in all individuals affected with pulmonary tubercles. There are numerous varieties in this respect, which it is of importance to point out.

24. Numerous tubercles, either still in the state of crudity, or already softened, may exist in the lungs; these tubercles may give rise to all the symptoms of phthisis in the second and even in the third stage, and yet the sound yielded on percussing the parietes of the thorax may not have undergone any alteration. This perfect preservation of the sonorousness of the chest in phthisical patients is always observed, when the pulmonary parenchyma has retained its healthy state around crude softened tubercles. Now, as we have already seen, this is far from being a rare case; and, under such circumstances, it is evident that percussion cannot be of any advantage to ascertain the existence of tubercles.

25. In several patients not only does the chest when percussed retain the clear sound which exists in the normal state; but again, in a certain number of cases, the sonorousness of the thoracic parietes is actually greater than in an individual whose lungs are not tuberculated. M. Lerminier often remarks to those who follow his clinique this extraordinary increase of sonorousness presented by the chest in more than one phthisical patient. Sometimes then the sound is so clear, that one would be inclined to think that a gas existed in the cavity of the pleura, in a word that there was a pneumo-thorax.

This increase of sonorousness appears particularly to present itself under two circumstances:—1st. When in a point of the lungs there exists an immense tuberculous excavation, into which the air penetrates freely by one or more bronchial tubes which open into it, and the parietes of which secrete but a little liquid, so that this cavity contains much more gas than pus. 2ndly. Though there does not exist a cavity which serves as a receptacle to a great mass of elastic fluid, this increase of sonorousness may still manifest itself in the case where a great number of pulmonary vesicles have undergone considerable dilatation, whence results a pulmonary emphysema more or less extensive.

In the first case, the increase of sonorousness is partial. It is most usually beneath either clavicle, between this bone and the breast, in a space more or less accurately circumscribed, that the chest, when percussed, yields a sound evidently clearer than in any other part. It may also be observed in other points, and, for instance, we have ascertained more than once the existence of this extraordinary sonorousness in the hollow of the axilla, when percussed and compared with the hollow of the axilla of the opposite side, in the supra-spinous fossa, more rarely in the infra-spinous fossa. As a general principle, we may conceive that it is in the parts where cavities are most usually formed, that the partial increase of sonorousness in question should be met with. It may happen, also, that this phenomenon, when sought for several days in succession, does not uniformly present itself. It ceases if the empty cavity, whose presence it indicated, comes to be filled with liquid; it reappears according as this becomes evacuated, and it continues or disappears again, according to the alternate and more or less continued states of emptiness or fulness of the tuberculous cavity.

In the second case, that is to say, when the increase of sonorousness of the thoracic parietes is owing to dilatation of the pulmonary vesicles, this greater sonorousness may still be partial, as in the preceding case; so it is, when the dilatation of the vesicles itself exists only to a small extent. But it may also be general, which happens when numerous tubercles are scattered through the entire pulmonary parenchyma, and between them a great number of air vesicles are dilated. The dilatation of these vesicles permits them to receive in a given time a greater quantity of air than in the normal state ; thence results, in a way entirely mechanical, increase of sonorousness of the thoracic parietes in the corresponding points. Thence also results the establishment of a sort of supplementary respiration, which may show how, in several phthisical patients, in whom a great number of pulmonary vesicles are compressed, obliterated, and occupied by tubercles, the dyspnœa is nevertheless not at all considerable. Marvellous compensation, of which we see several other examples in the system, both in health and in disease ! Thus the small arteries of a limb become enlarged and dilated, when the principal artery can no longer be traversed by blood. Thus when one of the kidneys, being atrophied or disorganised, becomes incapable of secreting urine, we often see the corresponding one acquire an enormous size, etc.

It is evident that it may sometimes become difficult to decide, in cases where the two sides of the chest do not yield the same sound, whether there be really an increase of the natural sonorousness on the one side, or whether this side does not appear more sonorous, only because the other, without being as yet dull, has already lost the perfectly clear sound of the natural state. The consideration of the other signs can alone lead to the establishing of such a distinction.

There is again a circumstance which, in a considerable number of phthisical patients, might lead one to admit the existence of this increase in the sonorousness of the chest,—that is, their state of emaciation. The muscles which cover the thoracic parietes are in them so wasted, that they now merely form a thin layer interposed between the skin and ribs ; in this state, the chest, when percussed, always yields a sound much clearer than when thick muscles cover it. This, I think, is the most frequent cause of the remarkable sonorousness presented by the thoracic parietes in several phthisical patients. With respect to the first cause, which consists in an increase in the capacity of the vesicles, it may be often rather supposed, as it is not possible strictly to prove its existence.

26. The diminution of sonorousness in the thoracic parietes manifests itself in phthisical patients principally under three circumstances :—1st. When in a more or less extensive portion of the lung the tubercles are so multiplied, that, by coming into contact and becoming confounded, they have caused the pulmonary parenchyma to disappear ; 2ndly, when the substance of the lung is inflamed and indurated around the tubercles ; 3rdly, when the pleura becomes the seat of a liquid effusion.

The dull sound, owing to the first of these causes, is rarer than that resulting from the second. We shall now attend more particularly to the latter. We have already seen that the inflammation of the portions of the pulmonary substance which surround tubercles may precede the latter ; but more frequently induration of a considerable portion of the lung, around tubercles, takes place only when they are now very numerous, softened, and replaced by caverns. This important fact may be strictly proved by the employment of percussion. In fact, in the first stages of phthisis, though numerous tubercles already exist in the lungs, the chest, when percussed, yields everywhere a clear sound ; the contrary case is an exception. Then, at this period, there is not yet any induration of the pulmonary parenchyma ; which does not mean that in the very point where the tubercle is developed, or in some of the portions of lobules which surround it, there is not already that circumscribed engorgement, one degree of which constitutes the granulations of Bayle : at a later period, according as the disease advances, and particularly when auscultation announces the existence of caverns more or less extensive, percussion detects a dull sound in different points, and principally around caverns. These being infinitely more common, as well as the tubercles to which they succeed, in the upper lobes, it is in the points of the thoracic parietes corresponding to these same lobes that the *dulness* will principally exist—namely, beneath the clavicles, between this bone and the breast, in the hollow of the axillæ, in the supra-spinous fossæ, as also superiorly in the infra-spinous fossæ.

27. M. Martinet (*Revue Médicale*, 1823) has directed attention to a remarkable modification of the sound yielded by the chest on percussion, where there exists a cavity containing at one and the same time liquids and gases. Percussion, says this skilful observer, then yields a sound similar to that resulting from the slight contact of two metals, a real *metallic tinkling*. As yet we have been able to detect this phenomenon only in three phthisical patients*, and in all three a cavern existed in the point where percussion produced the tinkling. It does not appear that this phenomenon is connected either with the extent of the caverns, with the consistence of their parietes, or with their thickness. We have not been able to discover the organic condition which favours its production.

28. In the cases where percussion affords no information, the simple application of the hand over the thoracic parietes has sometimes discovered the place where a tuberculous excavation existed, as certainly as was afterwards done by auscultation. If, in fact, we carry the pulp of the fingers over different parts of the parietes of the thorax, it will sometimes happen that in several of these points, at each word pronounced by the patient, there will be felt, at the end of the fingers, a peculiar frémissement, which will extend to a greater or less distance along the fingers and palm of the hand. The sensation, of which the fingers then become the seat, may with some correctness be compared to the sensation felt when a vibrating metallic wire is touched. The frémissement in question, not much marked, is a physiological phenomenon in several persons whose voice is loud and sonorous ; but if it is very loud, and sufficiently intense, for instance, to produce in the pulp of the fingers a sensation really painful, and particularly if there is not equal intensity in the same corresponding points of both sides of the chest, it should be considered a pathological phenomenon. This inequality in the intensity of the species of vibration communicated to the fingers applied over the thorax whilst the patients speak, may be very easily distinguished below the two clavicles. In several cases where this vibratory frémissement existed to a high degree only under one of these bones, we have been able to satisfy ourselves that it announced the existence of cavities more or less considerable, surrounded by an indurated pulmonary parenchyma. This latter condition appears to us to be more essential to the production of the phenomenon of vibration in question than the greater or less extent of the tuberculous excavations seems to be. When, on the contrary, there is only induration of the pulmonary parenchyma without excavation, this sensation of vibration ceases entirely to be perceived, whilst it is still perceptible in parts where the air fills the pulmonary vesicles. The absence of vibration on one side of the thorax often suffices to diagnose the existence of a pneumonia or a pleuritic effusion on this side, before percussion and auscultation have been employed.

29. It is now acknowledged that the application of the ear over the thoracic parietes, employed for the purpose of ascertaining the different sounds or murmurs which may be produced in the lungs, affords much more information than can be given either by percussion, or by the simple application of the pulp of the fingers to the chest. With respect, however, to pulmonary phthisis, we should be far from considering auscultation in all cases as a sufficient or infallible guide. In fact, tubercles may exist in great numbers in the parenchyma of the lung, they may even be partly softened, and still auscultation may be

---

* Since this was written, I have several times detected a metallic tinkling where a cavern existed.

entirely insufficient to detect their existence; and if we then confined ourselves solely to the information which it gives, a tuberculous lung would often be considered as a healthy lung. In other circumstances, even where auscultation affords a certain number of signs, these may be far from being always so well marked, that it may be possible in all cases to announce from them alone the existence of pulmonary tubercles. Will it be said that the discovery of the method of auscultation has assisted but little in the diagnosis of phthisis? Our meaning would be but ill understood if such an inference were to be drawn from what we have said. In a great number of cases, auscultation renders this diagnosis more precise and more exact; it is capable of marking the extent, the seat, and the degree of alteration of the lung much better than any other mode of investigation. More than once has it discovered tuberculous excavations in patients who seemed affected merely with slight chronic bronchitis, or at most with tubercles still crude and few in number. But a circumstance with which it is important that we should be thoroughly impressed is, that to establish a diagnosis or prognosis in a patient threatened with pulmonary phthisis, we should never place exclusive confidence in auscultation; we should certainly expose ourselves to the commission of the most serious errors if we did not at the same time pay attention to the other signs.

30. When tubercles, more or less numerous, and in different stages, exist in the lungs, they may be announced either by different modifications of the respiratory murmur, or by the existence of different râles, or, in fine, by the peculiar reverberation of the voice in one or more points of the chest.

31. Laennec has very well described the peculiar bruit (le bruit *sui generis*) perceived by the ear at each inspiration, when applied to the chest of a healthy individual. This sound, which in the preceding part of the work we have designated by the name of *sound of pulmonary expansion*, or *vesicular respiration*, may continue to present itself in certain phthisical patients, such as it presents itself in the healthy state; at other times it is evidently weaker; at other times it acquires much greater intensity; besides, it may have retained all its distinctness, or be more or less mixed with some râle. We shall now study those different varieties which are connected either with the different states of tubercles themselves, or with the varied changes which the parenchyma of the lung may take on around the tubercles.

32. There are in the first place cases (and they are far from being rare) in which the murmur of pulmonary expansion appears to be neither considerably increased nor diminished in intensity; at the same time its clearness is not altered; it exists, in a word, such as it is found in the healthiest persons. In no part is there heard either râle or pectoriloquy. Here, then, by auscultation alone we cannot suspect the existence of an affection of the lung. However, all the other signs seem to indicate the presence of tubercles in this organ: thus the patient is harassed with a dry and obstinate cough; he has had frequent attacks of hemoptysis; the breathing is short and hurried; emaciation makes rapid progress; every night the pulse becomes accelerated, and the skin hot, partial or general sweats even begin to take place. Certainly, though percussion and auscultation give no information in cases of this kind, what practitioner will hesitate to recognise a first stage of pulmonary phthisis? If, at this period, an intercurrent affection hurries the patient to the grave, tubercles are actually found in the lung. But these tubercles are not very numerous; they are not yet softened; and they are surrounded by a healthy parenchyma. We have been able to verify this several times. From these facts, then, we have no hesitation in concluding that, at the commencement of a certain number of cases of pulmonary phthisis, auscultation is unable to detect the existence of tubercles.

In some rarer cases these tubercles already exist in considerable numbers, several are even softened, the patients die of lung disease, and yet, a little time before death, the respiratory murmur was heard to be natural, mixed, however, most frequently with moist bronchial râles, such as exist in the slightest pulmonary catarrh.

Often, whilst on one side auscultation detects, beyond all doubt, the existence of tubercles, it discovers nothing in the other lung but the vesicular respiration of the normal state. From what we have just said, it is evident that this does not prove that the lung of this side is exempt from tubercles ; it only proves that these bodies are less numerous there, and less advanced in their development ; that a healthy tissue surrounds them, and, finally, that on this side the bronchi, but slightly inflamed, secrete very little liquid, whence results the absence of râle.

33. In other patients the respiratory murmur is not that of the normal state : it is weaker or stronger.

34. The diminution in the intensity of the respiratory murmur can be well appreciated only when it is partial. In fact, in several persons in perfect health, the ear applied over the thoracic parietes, hears only a very slight respiratory sound, scarcely perceptible. The same happens with persons who, by deep respirations, do not render it sensibly stronger. We should beware of taking this nearly total absence of the respiratory murmur for a pathological state. Far from it, the general and uniform weakness of this murmur often indicates a very healthy state of the lungs. But it is no longer the same if the weakness of the murmur of the pulmonary expansion is not equal on both sides in corresponding points, as, for instance, under either clavicle. In patients, one of whose lungs contained at its summit numerous miliary tubercles so crowded together, that the pulmonary parenchyma between them could be scarcely distinguished, auscultation gave us no other sign of the existence of these tubercles than a perceptible diminution in the intensity of the respiratory murmur on the side where they existed. In several cases of this kind the sonorousness of the thoracic parietes did not appear to us sensibly diminished. Again, we have ascertained weakness of the respiratory murmur, or even its total absence, in points where, after death, we found tubercles scattered in greater or less number in the midst of a pulmonary parenchyma very much indurated, and become entirely impermeable to the air. Here there was absence of respiration and dulness of sound. These assertions may be very readily verified by auscultating and percussing the portion of the chest situate below the clavicles, by way of comparison, in a certain number of phthisical patients.

The diminution in the intensity of the respiratory murmur, or its total absence in a more or less limited space, cannot then be regarded as a pathognomonic sign of tubercles, for such a phenomenon may be produced in several cases where there are no tubercles, when there is, for instance, simple chronic pneumonia, partial pleuritic effusion, or pneumo-thorax. Even when tubercles do exist, it is but in the smaller number of cases that they appear to be the principal cause of the diminution or absence of the respiratory murmur : this phenomenon seems attributable in particular to the pulmonary induration surrounding the tubercles.

35. Lastly, in a great number of phthisical patients, the respiratory murmur is much more intense than in the normal state, though it still retains all its clearness. This increase in the intensity of the respiratory murmur alone suffices to denote a pathological state ; it proves that some obstacle is opposed either to the free entrance of the air into the air-vesicles, or to the free circulation of blood in the vessels which enter into or go from the lung. This is the only unusual phenomenon often discovered by auscultation in several persons, who present all the symptoms of pulmonary phthisis either at its commencement, or even now arrived at a certain stage, and in whose lung numerous tubercles are actually found after death. In these patients the respiratory murmur is heard with a facility and clearness which might impose on unpractised observers, and induce them to con-

sider the species of respiratory murmur which they hear as the type of healthy respiration.

The increase in the intensity of the respiratory murmur here in question, coincides with great sonorousness of the thoracic parietes. It indicates that around the tubercles the pulmonary parenchyma has retained its healthy state to a great extent. It frequently happens that the respiratory murmur is thus clear and strong only in one lung, whilst in the other the natural murmur of respiration is replaced by different râles. On the side where the respiration has retained its clearness, it is not to be inferred that there are no tubercles, but merely that a healthy parenchyma surrounds them, and that if some tubercles are already softened there, they do not yet communicate with any large bronchial tubes. There even may be circumscribed inflammation of the parenchyma around several tubercles, and still the respiratory murmur may retain all its strength and clearness ; this is what happens when those partial pneumonias exist in the centre of the lung, or being of little extent they may be readily overlooked by auscultation. In this latter case, in particular, we found a young man, twenty years of age, who, labouring under chronic peritonitis, presented no other symptom connected with the chest during his stay in the hospital, except catarrhal expectoration. The chest, when percussed, sounded well in every part. The respiration, when examined, was found to be in every part strong and clear ; only in different points, and from time to time, it was obscured by some mucous râle, evidently the result of a momentary accumulation of mucus in some bronchial branch. On opening the body, the two lungs presented in different points, and at a distance from their periphery, reddish hard masses, impermeable to air (red induration), contrasting by their colour and hardness with the surrounding parts, which were of a yellow white, and which were not even engorged (which rendered the distinction between the healthy and diseased parts still more perceptible). The most considerable of these masses might have contained a large nut, the middle-sized ones a kidney-bean, and the smallest a large pea. They contained a great number of miliary tubercles. There were not more than three or four where the pulmonary parenchyma was sound. Traces of chronic peritonitis were also found with the development of numerous tubercles in the false membranes which united the intestinal convolutions together.

These pulmonary tubercles developed in a person who was not at the same time labouring under a more serious affection, might probably have given rise to more marked symptoms ; for it is a grand law in pathology, that when two chronic affections are simultaneously developed, the more severe one masks and obscures the symptoms of the other. Often also persons attribute to the first some of the phenomena which may depend equally on the second. But even where pulmonary tubercles being the sole affection, the continuance of the cough, joined to other local or general symptoms, might have inclined one to suspect their existence, auscultation would not have given any other information, and consequently the tubercles would not have been revealed by it. In fact, the mere increase in the intensity of the respiratory murmur indicates, no doubt, in our opinion, a lesion of the respiratory organs ; but it may be the result of a great number of different alterations of these organs. It may even manifest itself, the lungs being perfectly sound, and the alteration being seated in the heart or aorta.

It is evident, also, that the increase in the intensity of the respiratory murmur depends here, as well as the greater sonorousness of the thoracic parietes, on the kind of supplementary respiration which is established when the air ceases to enter freely into a greater or less extent of the lungs.

36. Hitherto we have directed our attention merely to the modification of intensity in the respiratory murmur with respect to its quantity. But this murmur is not only increased or diminished in phthisical patients, its real nature

also is very frequently changed: the ear, applied to the chest, hears, no doubt, the air enter at each inspiration into the air-passages without the mixture of any râle; but the murmur so heard differs considerably from that which results from the free entrance of air into the vesicles of the lung; it is, in a word, no longer the murmur of pulmonary expansion, it is succeeded by other species of murmurs, or sounds (souffles) which cannot be confounded with it, and which sometimes indicate that the air does not penetrate beyond the bronchial tubes of a certain size, and sometimes that it enters into a larger or smaller empty cavity.

The first phenomenon is observed in a certain number of phthisical patients, whose pulmonary parenchyma is indurated to a great extent: it is this same phenomenon which is observed in many cases of acute pneumonia, and which, by reason of its seat, we have in a former part of the work designated *bronchial respiration.* It indicates merely impermeability of the tissue of the lung: it cannot serve to detect the presence of tubercles.

The second phenomenon is much more characteristic. It manifests itself when a cavity formed in a part of the tissue of the lung, not far from the surface of this organ, and containing little or no liquid, communicates with a large bronchus, through which the air may be driven with force, and in great quantity at the same time. Now, pathological anatomy teaches that, with the exception of some very rare cases, such a cavity can be only the result of a softening of tubercles; and in the same way as we have given the name of *bronchial respiration* to the murmur which is heard when the hepatised lung does not allow the air to penetrate beyond the large bronchi, in the same way, by reason of its seat, we shall designate the species of modification of the respiratory murmur now in question by the name of *cavernous respiration.* It is a sort of exaggeration of the bronchial respiration. Each inspiratory movement produces in a circumscribed point a kind of very loud souffle, rather like to that which is produced by forcing air into a closed vessel. It is most usually under the clavicle, or in the hollow of the axilla, that this particular souffle is heard. It can only take place when the cavity where the phenomenon occurs is nearly empty of liquid; if the latter condition does not exist, the cavernous respiration is succeeded by the mucous râle. The result is, that in some individuals it manifests itself only at intervals, every time that the sac in which it occurs is emptied of the liquid which it contained. But in others it exists constantly, and one might then suppose that very little liquid is usually secreted by the parietes of the cavity. It should be heard, for instance, when these parietes, in cases of tendency to cicatrisation, come to be lined by a cartilaginous membrane.

There is but one disease, dilatation of the bronchi, in which a sort of cavernous respiration might also be heard. But this dilatation should be carried to a very high degree, in order that so marked a souffle should be produced as that which is owing to the entrance of air into a tuberculous cavity*.

This souffle seems to acquire its maximum of intensity, when the pulmonary tissue has undergone considerable induration around the cavity where it is produced. It is then, also, that pectoriloquy is most clearly heard.

37. The respiratory murmur, whether vesicular, or bronchial, or cavernous, is far from retaining its clearness in the greater number of phthisical patients. It is often replaced by different râles, arising from the mixture of the air with the liquid contained in the bronchi, or in tuberculous cavities.

Nothing is more variable than the nature of the râles heard in the chest of phthisical patients. It must be so, since most of these râles take place solely in the bronchi. Thence it may be understood that sounds of the most varied kinds must be heard, according to the quantity and quality of the liquid contained in these bronchi, according to the place which it shall occupy in the divisions of the bronchial tree, according also as the mucous membrane of the air-passages will, or will not, be thickened, ulcerated, or more or less disorganised.

---

* See in the preceding part some cases of dilatation of the bronchi, in which one of the most remarkable symptoms was a peculiar *souffle* heard at each inspiration.

In my opinion, there is no râle having its seat in a tuberculous excavation, which may not also be found in the bronchi. I have heard, for example, a real gurgling (*gargouillement*), entirely analogous to that which is produced in large caverns, in phthisical patients whose lungs presented after death but very small cavities, which had not occasioned this gurgling; the latter then had its seat in the bronchi. I have also heard it in individuals whose lung was found to be free from tubercles, and who had but mere chronic bronchitis.

From these facts it follows that the species of râle known by the name of *gurgling*, cannot, any more than the other râles, be considered a truly pathognomonic sign of pulmonary phthisis. However, it must be observed that if one of the lungs contain much more tubercles than the other, it is usually on the side where the tubercles are most numerous that the râle is most marked; but that depends solely on this circumstance, that on the side where the greater number of tubercles exists, there is more severe bronchitis: this râle then becomes a sign, which is not devoid of importance in detecting the principal seat of tubercles; but it is evident that it is not occasioned by them. We may further remark, that if in a determinate point of the chest where caverns most usually exist, under the clavicles for example, there be heard a constant râle more or less analogous to gurgling, we shall be able thence to infer that this râle has actually a cavern for its seat; provided, however, that the existence of the other signs announces the existence of pulmonary phthisis. But here it is evident that such a diagnosis rests only on a mere calculation of probabilities, founded on this, that, in a subject who presents all the signs of advanced phthisis, cavities must probably exist in the summit of the lungs. This is so true, that if a precisely similar râle be heard behind the thorax to a great extent, which is far from being rare, we shall cease to consider it as the sign of a cavern; we shall refer it to an accumulation of mucus in the bronchi, and correctly so; however, I repeat it, the sensation to the ear will be the same, but we shall interpret it differently.

This gurgling is not the only species of râle heard in phthisical patients. There is often heard also either a simple mucous râle, which seems to be but a minor degree of gurgling, or the crepitous râle, which also differs from the preceding only in appearing to have its seat in the smaller bronchi or in the pulmonary vesicles, as has been stated in the preceding part. Often, again, none of these râles is very distinct; but, in auscultating the chest, it is discovered that in one or more points, sometimes through the entire extent of one lung, or even in both, the respiratory murmur is not clear, as if the air, having arrived in the small bronchi, could not penetrate there but with difficulty: if, then, the patient breathes more deeply, a crepitous or mucous râle is heard; it seems that in this case a certain effort on the part of the patient is necessary that the air may traverse the more or less viscid and thick liquid, which obstructs the bronchial tubes. These different râles have their seat most frequently in the bronchi; sometimes, however, they seem to be produced in small tuberculous excavations; in no case can they give any certainty that the latter exist.

38. The particular resonance of the voice which constitutes pectoriloquy, is the third sign afforded by auscultation to ascertain the existence of pulmonary phthisis which has attained a certain stage. This phenomenon of pectoriloquy has been so well described by Laennec, that we cannot do better than refer to the work of this illustrious observer for a description of it.

But what is indicated by this seat, and what confidence should be attached to it?

We readily admit that where a tuberculous excavation exists, the voice often resounds so as to produce the phenomenon of pectoriloquy; but it is also very certain that in a great number of cases, immense caverns may exist without there being pectoriloquy. Thus then, though this phenomenon, when it does take place, indicates the presence of a tuberculous cavity, we must not conclude from its not occurring, that there are no caverns. How then does it happen that, two cavities existing of the same size and situate in the same place, pectoriloquy is very manifest in one case, and does not take place in the other? It may be supposed that the nature and quantity of the liquid contained in the cavity, that the manner in which the bronchi open into it, may exercise some influence on the more or less evident production of the pectoriloquy. The state of the pulmonary parenchyma around the tuberculous cavity appears also to contribute very much to the more or less easy formation of this phenomenon. We think we have ascertained that pectoriloquy is particularly well marked when there is considerable induration around the cavern, a circumstance easily recognised during life by the existence of a dull sound. When this induration does not exist, pectoriloquy seems to manifest itself only when the cavity is very superficial; when, on the contrary, there is induration, pectoriloquy may be heard, though the cavern be situated far from the point over which the stethoscope is applied ; the phenomenon of pectoriloquy then seems to be produced less in the cavern itself than in the indurated part of the parenchyma, situate between the excavation and the thoracic parietes. In this case a very small cavity may give rise to very considerable pectoriloquy. Thus, for instance, one of the phthisical patients, in whom pectoriloquy was best heard under the right clavicle, presented a well-marked black induration of all the upper lobe of the right lung, with a mixture of very many miliary tubercles.— Yet it was entirely in the posterior part, in the portion of parenchyma in almost immediate contact with the angle of the ribs, that we discovered an excavation which would scarcely have admitted a large nut. Lastly, it must not be forgotten that without there being any trace of tuberculous excavation, and by the mere fact of the existence of a considerable induration of the pulmonary parenchyma, the voice may often present a resonance which approaches more or less to perfect pectoriloquy; it is then bronchophony, according to Laennec's term ; but if it be true that these different phenomena are separated only by mere shades, it is easy to see how frequently they must have a tendency to be confounded, so that then they can no longer be distinguished but by a very well practised ear.

39. To recapitulate, from our researches regarding auscultation, with respect to its utility in the diagnosis of pulmonary phthisis, we think we may draw the following conclusions :—

1st. There are cases where auscultation cannot enlighten us with regard to the existence of tubercles. This happens when they are still in a state of crudity, and often too, when they are softened without constituting large cavities. Death may even be occasioned by the sole presence of tubercles, before auscultation has been able to detect their existence. Cases of this kind are far from being rare.

2nd. There are other cases in which auscultation affords but doubtful signs, which by themselves would be insufficient to afford certainty that tubercles exist in the lung, but which may acquire a certain value, when they are combined with other signs ; such is the case of a great number of râles, and of several modifications of the respiratory murmur or of the voice. Among the number of those doubtful signs, we must place those which owe their value only to their seat and constancy : such is the gurgling when it is found for a continued length of time under either clavicle, or in the hollow of the axilla. It is very certain too, that this gurgling sound is not a pathognomonic sign of the existence of a tuberculous excavation, since we have often observed it in points where after death we found no accidental cavity, and where it could be produced only in the bronchi full of liquid (36). Recently we ascertained the existence of this gurgling sound in the very highest degree in all the posterior part on the right side of the chest of a young girl in whom we found no other lesion than red hepatisation of the pulmonary tissue. The patient had presented during life all the other symptoms of acute pleuro-pneumonia.

3rd. The only two pathognomonic signs, in our opinion, afforded by auscultation, are, on the one hand, pectoriloquy, *when it is very evident;* and, on the other hand, a peculiar souffle, which is heard during inspiration where the pectoriloquy exists (35). This souffle may be continued or may alternate with a gurgling sound more or less marked.

4th. It is, therefore, only when the pulmonary parenchyma contains cavities, that auscultation can afford positive information respecting the existence of tubercles; but even in this case it does not necessarily afford them. Before this period, it can afford probabilities at the very most, which may have more or less weight, according to the accompanying circumstances, and so contribute to elucidate the diagnosis.

SECTION II.

SIGNS AFFORDED BY THE RESPIRATION.

40. After acute pleuro-pneumonia, and simple pleuritis terminating in effusion, the tubercular affection of the lungs might seem to be the disease which should occasion most embarrassment in the breathing; yet such is not the case, and this is one of the circumstances not least remarkable in the history of phthisis, namely, the great facility with which the breathing is still performed in persons in whom more than two thirds at least of the pulmonary parenchyma have often become impermeable to the air. It may be laid down as a general principle that, with the exception of some cases of acute inflammations of the lung or pleura, diseases of the heart disturb the respiration much more than diseases of the pulmonary apparatus.

41. We have already seen that a slight embarrassment in the breathing is a phenomenon which manifests itself in several individuals long before they present well-marked symptoms of pulmonary phthisis. It is probable that the dyspnœa, in other respects not very great, which habitually annoys these persons, depends oftentimes on the presence of some tubercles in the lung; but it is also very certain that this dyspnœa may be solely connected with the sanguineous congestion which occurs in the lung of certain persons at longer or shorter intervals, as in other persons this same congestion occurs in the brain. This simple congestion may produce hemoptysis more or less frequent, and moreover it may be justly regarded as the cause of the tubercles which are to be developed at a later period. We have had an opportunity of opening the bodies of persons placed in the two conditions now mentioned. Having died of affections not connected with the pulmonary apparatus, they had complained of having had, for a long time, a little shortness of breathing. In some, this dyspnœa was habitual; in others it appeared only at intervals. Sometimes some tubercles scattered through the lungs, the parenchyma of which was in other respects very healthy, accounted for this dyspnœa; sometimes neither the lungs, nor air-tube, presented any appreciable alteration, and we were not able to explain the dyspnœa which occurred during life, except by the existence of periodical sanguineous congestions in the lung. But even in the cases where the lung contained some tubercles, is it in consequence of intercepting the air in the points which they occupied, that they caused the dyspnœa, or rather, is it not because they occasioned a sanguineous congestion around them? This latter opinion appears the more probable. Is it not by a similar congestion that tubercles developed in the brain often produce, periodically, either convulsions, or other nervous symptoms?

42. Whilst in the patients now in question, the dyspnœa for a long time precedes the appearance of phthisis, in others we already observe undoubted symptoms of pulmonary tubercles, and yet their breathing seems tolerably free; at least when they are in a state of rest, they do not complain of feeling any dyspnœa; several persons even, whose lungs are already filled with tubercles, may speak and walk for a long time without being out of breath. We lay stress on this circumstance, in order that, to lay down a diagnosis of phthisis, we may not attach an exclusive importance to the greater or less difficulty of breathing. And indeed we shall not be surprised that pulmonary tubercles, though already numerous, should cause so little dyspnœa, if we call to mind several cases which we have cited when treating of pleuritis, and in which we have seen persons able to walk, run, and lie, in every position, engage in the most fatiguing employments, though there was an immense effusion in them, in one of the sides of the chest. However, it is correct to say, that in the great majority of persons who have tubercles in the lungs, the breathing is more or less short, and deep inspirations are often impossible; if the patient wish to make them, he feels as it were an insurmountable obstacle which opposes the free entrance of air into the pulmonary parenchyma. Some persons are even conscious of the point where the air cannot enter thus freely; they say that they do not breathe in such or such a part of the lung. The dyspnœa, which is often inappreciable to the patient when in a state of rest, becomes very manifest, from the moment he commences to exercise himself, or even, at a more advanced stage of the disease, by the mere fact of change of position in the bed. This dyspnœa is seldom carried far enough to render lying in the horizontal position impossible. It is unnecessary to say that it must increase according as the tubercles become multiplied. Some circumstances exercise a very perceptible influence on its increase or return, as, for instance, every thing which has the effect of modifying the action of the nervous system. A woman, who was now in a very advanced stage of phthisis (there were caverns in the lung), was visited by a friend who endeavoured to point out to her the near approach of death, in order to induce her to make a will. Up to this period there was no remarkable dyspnœa observed in this person. But immediately after the interview now mentioned, her breathing suddenly became very much embarrassed, she passed the entire night in a state of orthopnœa. The next morning we found her in a state of commencing asphyxia; M. Lerminier had her bled immediately to a considerable extent, notwithstanding the state of exhaustion in which the patient was; her lower extremities were covered with sinapisms. In the course of the day the difficulty of breathing diminished; she again became able to lie on her back, and the day after her breathing became nearly as free as before.

This temporary state of suffocation, this species of asthmatic attack followed so soon the great excitement which the patient must have experienced, that we are perfectly right in referring it to the disturbance of the nervous system. It is, in fact, a general law in pathology, that, when this system is for a time disturbed in its action in an individual labouring under disease of some organ, it is that particularly that is made to feel the influence of the momentary disturbance, which the functions of the nervous system have undergone. This is peculiarly evident in diseases of the stomach, liver, uterus and its appendages, and even of the brain itself; in fine, of the lung and its connexions. If the woman, whose case we have now mentioned, had had chronic gastritis with symptoms little marked, it would have been on the stomach particularly that the disturbance occasioned in the functions of the brain would have acted; the epigastrium, habitually free from pain, would have become painful; vomiting would have supervened, &c. If this same patient had had an affection of the uterus, uterine hemorrhage, more or less profuse, would have been the probable result of the mental excitement; if she had had an old attack of apoplexy, a new one might have taken place, &c. But with her the lung was seriously affected, and, conformably to the law now laid down, it was the functions of this organ that were disturbed. Was the dyspnœa in this case the result of a considerable sanguineous congestion, which was produced suddenly in the lung, a kind of pulmonary apoplexy? There was no certainty of it here, because the dyspnœa disappeared without producing hemoptysis. In another individual, who was in a much less advanced stage of phthisis than the preceding, in whom we could as yet only suspect the existence of pulmonary tubercles, we have seen a spitting of blood appear at different times after mental emotions. Here the production of a sanguineous congestion in the lung by nervous influence can no longer be called in question.

43. The introduction of aliment into the stomach is another circumstance which, in a certain number of phthisical patients, produces a considerable embarrassment in the breathing. Some feel this embarrassment as soon as ever the food has arrived in the cavity of the stomach; others do not feel it till the process of chymification has commenced, and others only after a longer lapse of time, at the period when it may be presumed that the chyle now formed begins to be mixed with the blood. How are we to explain those differences in individuals in other respects placed under the same circumstances? How explain again why, in other phthisical patients, the different periods of digestion do not occasion any perceptible difficulty in the breathing? Let us account for it, if we will, by the variable activity of the sympathies, provided it be not forgotten that this word, which is so often employed, in many cases serves only as a cloak for our ignorance. Here, as in many other circumstances, we are forced to admit that in each individual the same disease presents itself with symptoms more or less variable, without our being able frequently to give a satisfactory reason for this remarkable inconstancy of morbid phenomena, the organic cause materially appreciable seeming to be in other respects precisely the same.

44. The period of menstruation, in women affected with pulmonary tubercles, is also sometimes marked by a considerable increase in the difficulty of breathing, whether the menstrual flux continues to take place, or may have ceased to exist. If at the same time that there is suppression of the menses, the female is pale, chlorotic, and if, on the other hand, the symptoms of pulmonary phthisis are yet but little marked, the real cause of the dyspnœa may be entirely overlooked. Mere secondary attention is paid to the dry or moist, and in other respects slight cough, which exists for a longer or shorter time; no other local symptom as yet reveals the existence of pulmonary tubercles; the emaciation which is going on, the paleness of the face, are considered as connected with the suppression of the menstrual flux, and it is on this same suppression that the periodical dyspnœa is made to depend. But more evident symptoms of the pulmonary affection soon appear: then the difficulty of breathing becomes habitual; only it continues to be much more considerable at each menstrual return. Can its real cause be thenceforward mistaken? May we not refer these periodical exasperations of dyspnœa to the sanguineous congestion, which takes place every month around the pulmonary tubercles, which have a tendency to draw to them the fluxion which, in the normal state, should be directed towards the uterus? In cases of this kind the pulmonary affection is a sort of revulsive too powerful for us to be able to expect a re-establishment of the menstrual discharge. However, we might hope to diminish and even to check the periodical dyspnœa in question, by exciting every month an artificial discharge of blood towards the genital parts. By this method, we might fulfil a double object: first, diminish a symptom very painful for the patient; secondly, put an obstacle to the progress of the tubercles, the number of which can only be increased by the periodical sanguineous congestion, of which the pulmonary parenchyma is in some measure habituated to be the seat.

45. The greater or less rapidity with which pulmonary tubercles are developed, is one of the circumstances which influence most perceptibly the state of the respira-

tion. In persons whose disease makes but very slow progress, the respiration is generally but little embarrassed ; it is less free in those whose tubercles are become multiplied, or are softened more rapidly. Finally, when the pulmonary phthisis takes on an acute process, when in a very short space of time the two lungs come to be filled with tubercles, the difficulty of breathing may then become the most prominent symptom, or become one of the direct causes of the very prompt death of the patient. Here, also, two cases may present themselves ; either caverns are formed in very little time in the pulmonary parenchyma, and then the ordinary symptoms of phthisis coincide with the great dyspnœa ; or else the tubercles are multiplied very rapidly without becoming softened ; around them the pulmonary parenchyma may remain healthy ; whilst things remain in this state, auscultation and percussion give no information ; the expectoration presents nothing characteristic ; the disturbance of the circulation does not present itself under the form of the ordinary hectic of phthisical persons. There no longer remains then any thing but the great embarrassment of the breathing, as a local symptom of pulmonary tubercles. But for this very reason that so severe a dyspnœa is not ordinarily observed in phthisical patients, and because in other respects the aggregate of the symptoms observed is not that which marks in most patients the existence of pulmonary consumption, the latter may be very readily overlooked ; in several cases of this kind, for want of an appreciable local lesion during life, the existence of a spasmodic or nervous asthma was believed in ; at other times, the simultaneous appearance of some palpitations of the heart, must naturally lead observers to refer the symptoms which they observed to an organic affection of the heart. The following is one of those cases in which the development of pulmonary tubercles was announced only by a suffocation which was constantly increasing, by a species of acute asthma.

CASE 5.—*Very rapid development of pulmonary tubercles producing the state of suffocation such as is observed in heart disease.*

A medical student habitually enjoying good health, was seized towards the middle of the month of March, 1822, with a little dyspnœa and some symptoms of plethora. Soon after he had diarrhœa, which ceased at the end of a few days, and an increase of the dyspnœa ; there was fulness of the pulse ; he took violent exercise for the purpose of diminishing the plethora, to which the symptoms felt by the patient were referred. On the 29th of March and the following days, he had hemoptysis ; thenceforward he had fever, cough, and orthopnœa, not at all proportioned to the slight pulmonary catarrh : pulsations of the heart strong and extended ; leeches to the anus the 3rd of April ; cessation of the hemoptysis on the 4th ; the oppression increased ; lips violet coloured. From the 4th to the 10th of April the patient presented most of the symptoms indicating disease of the heart, except infiltration ; he died in the state of suffocation which characterises this affection. The numerous bleedings and revulsives employed, brought but momentary relief. The autopsy detected no other lesions, but very small tubercles developed in great quantities in the two lungs, and surrounded by a crepitating and perfectly healthy tissue.

Thirty days did not elapse in this case between the appearance of the first morbid symptoms and the period of death. Will it be admitted that the pulmonary tubercles existed before the month of March, and shall we consider the great dyspnœa in the progress of which the patient died as wholly independent of the tubercles, as a mere nervous phenomenon ? But up to that period nothing could cause a suspicion of the existence of these tubercles ; and when anatomy discovers a material cause of disease and death, it seems to me unphilosophical to endeavour to substitute another cause for it, which is at most but probable and purely conjectural. There is nothing unreasonable in admitting that in less than a month the two lungs could have become filled with so great a quantity of tubercles.

I have seen the skin become covered with a vast number of small cancerous tubercles in an individual labouring under an internal cancerous affection. We every day see enormous cancerous tumours, when extracted by the knife, again shoot forth with still greater rapidity. The possibility of this rapid development of the pulmonary tubercles being once admitted, we may readily understand how, in consequence of this sudden development, the parenchyma of the lung had not, as it were, time to become habituated to their presence. Thence arose the dyspnœa, the constantly increasing intensity of which ultimately produced death by asphyxia. Thus there is a very great difference with respect to the general and local symptoms, between a pleuritic effusion, which increases but slowly, and that which, though less considerable, takes place more rapidly. Thus also in phthisical patients, in whom the greater part of the pulmonary tissue is become impervious to air, the breathing is still much less embarrassed than in persons who, labouring under acute pneumonia, have but a small portion of one of the two lungs hepatised. We shall not dwell longer on this subject here, as we shall have an opportunity of returning to it when treating of the progress of phthisis.

46. Finally, the state of the breathing in phthisical patients is modified more frequently and more considerably by different affections of the lung or its appendages, which complicate pulmonary tubercles, than by any of the preceding circumstances. If, for instance, in phthisical patients whose breathing is habitually but little embarrassed, the inspiratory movements are observed suddenly to become accelerated at the same time that the fever increases, there is every reason to apprehend acute inflammation of the pulmonary parenchyma around the tuberculous engorgement. An antiphlogistic treatment, the activity of which is proportioned to the state of the patient, puts a stop to this intervening inflammation, and at the same time the respiration returns to its original state. At other times the pneumonia does not yield, but passes into the chronic state, and from that time the dyspnœa which it had occasioned in its acute state, ceases almost as completely as if it had terminated by resolution. It is in fact a remarkable circumstance that the induration, a consequence of chronic inflammation, which at a certain period of phthisis exists almost always around tubercles, seldom occasions more dyspnœa than is observed in cases where the tubercles are surrounded by a healthy tissue.

The close cellular adhesions so frequently uniting the pleuræ costales and pulmonales in phthisical patients, seem to exercise no influence on the more or less free state of the breathing.

With respect to effusions into the pleura, which are much less frequent than adhesions in this class of patients, they most commonly announce their existence by a remarkable increase of the dyspnœa.

There are some phthisical patients in whom, though there may be neither considerable induration of the pulmonary parenchyma, nor effusion into the pleuræ, the breathing is habitually more embarrassed than in others in whom the lungs and their appendages appear to be placed in nearly the same conditions. The speech, in such persons, is short and panting ; lying in the horizontal posture is most frequently impossible, under pain of suffocation. At the same time they exhibit a disposition to puffiness of the face, and infiltration of the limbs. The cause of this particular dyspnœa no longer depends, in this case, solely on the lesion of the respiratory apparatus ; it indicates the complication of an organic affection of the heart, which sometimes existed prior to the pulmonary tubercles, and sometimes is developed subsequently to them. (On this subject see the article treating of the complications of phthisis in a subsequent part of the work.)

47. It is generally known that in persons, one of the sides of whose chest is the seat of a considerable effusion, this side often remains immoveable during inspiration. (See preceding part.)

In pulmonary phthisis a phenomenon still more remarkable is observed : that is the immobility, or at least the less dilatation of a more or less extensive part of one of the sides of the chest, where the tubercles are crowded in great numbers. This more or less complete immobility of a part of the thoracic parietes is particularly evident in certain phthisical patients beneath one of the clavicles, between this bone and the breast. It is not with the existence of vast tuberculous excavations that this partial deficiency in the movements of the ribs most frequently coincides, but with the existence of chronic pneumonia, formed around crude tubercles in greater or less numbers, or around small caverns. This partial immobility of the ribs coincides most usually with a dull sound. Where the ribs have lost their ordinary motion, or execute it but very feebly, the thoracic parietes seem depressed ; but this depression, which is only apparent, and which is owing to the deficiency of dilatation, should be distinguished from the real depression sometimes observed when a cavern, which has become cicatrised, exists. Then the ribs sink in order to follow the lung which is depressed, just as we see them depressed in consequence of the pleuritic effusion which is re-absorbed, in the case where some circumstance has prevented the lung from returning to its original volume.

This partial immobility of some ribs is not devoid of interest in a physiological point of view. Does not this fact prove that in inspiration the ribs can move independently of each other, and that they have not merely a common motion ? If, as we have often seen in phthisical patients, the lower ribs can still move when the upper ribs are immoveable, this proves that, independently of the action of the scaleni muscles, which we do not deny in the ordinary state, the intercostal muscles are capable of taking an active part in the act of inspiration. With respect to the action of the scaleni, as inspiratory muscles, we have often perfectly well ascertained it in certain emaciated phthisical patients, whose respiration was embarrassed.

In persons in good health, and in a state of repose both physical and moral, the ribs move, but in a manner scarcely perceptible, during each inspiration. In phthisical patients, on the contrary, even in those whose breathing still appears very free, we perceive the ribs to rise very perceptibly in each inspiratory movement ; the manner of breathing in man then becomes similar to that in woman ; but that which is physiological in the latter, is a pathological effect in the former, and is connected with a commencing alteration of the pulmonary tissue.

48. Hitherto we have considered the lesions of the respiration in phthisical patients merely in a mechanical point of view ; we have seen the inspiratory movements become accelerated in the direct ratio of the obstacles to the entrance of the air with equal facility into all the pulmonary vesicles, as if, by way of compensation, the parts which remained sound and pervious, should admit as a surplus the quantity of air which is no longer admitted into the tuberculated and hepatised portions of the lung. But respiration does not consist merely in the double motion by which the air enters the lung and makes its exit from it. The essence of this function is the change of venous into arterial blood. Considered in this point of view, the respiration of phthisical patients undergoes alterations still more important to be known and duly appreciated than the derangements of its mechanical phenomena ; and it is also remarkable enough that the disturbance of the latter is not always directly proportional to the disturbance of the chemical and vital phenomena of respiration. We have already, in fact, seen cases where there was observed but little dyspnœa, though a considerable portion of the pulmonary parenchyma had become impervious to the air, it being affected with chronic inflammation ; in other cases, on the contrary, the dyspnœa was much greater, though the lungs contained but some miliary tubercles, more or less numerous, surrounded by a very pervious parenchyma. We accounted for these differences by the difference in the progress of the disease. The influence of

habit is certainly not less over certain acts of nutritive life than over those of relative life. It must be remarked again, that if less air penetrate into a lung partially indurated, less blood must be formed, so that a sort of compensation is established, and it may happen in certain cases that the quantity of air introduced into the lung is nearly proportional to the quantity of blood to be arterialised.

The two principal effects which must result from the imperviousness of a portion of the pulmonary parenchyma to air relate to the blood which passes through it :—1st. The passage of the latter through the lung may become less free ; 2ndly, its change of the venous into arterial blood may be less complete. From this two-fold modification which the blood undergoes through the lung in its circulation and in its nature, certain morbid phenomena result which must for a moment engage our attention.

Bichat has proved that the mechanical obstacles to the course of the blood in the different parts of the body, and in the lung in particular, are not as numerous and as powerful as might have been supposed before the experiments of this distinguished physiologist.

In the lung, however, these obstacles are real in certain circumstances. Thus, for instance, anatomy has proved that in the species of bands formed of condensed pulmonary tissue, which traverse tuberculous cavities, large arteries or veins are found obliterated ; a similar obliteration is also observed at times in large vascular bronchi which pass over the parietes of cavities. If the latter are very large, it may happen that the greater part of the large vessels of an entire lobe of the lung is thus obliterated ; here then is a mechanical and real obstacle to the pulmonary circulation. Such an obstacle might even be admitted, *a priori*, when the lung is considerably indurated around tubercles, whether in the crude state, or beginning to soften, or already changed into caverns. Consider, in fact, in what state the pulmonary parenchyma then is. The greyish tint which it presents is no longer the result, as in the grey hepatisation of acute pneumonia, of mere purulent infiltration ; its extreme hardness, and the dryness of its section, exclude such an idea. Here, as in many other cases, chronic inflammation has thickened and condensed the tissue of the lung ; like other parts also indurated by inflammation this tissue seems to receive much less blood than in the normal state, as is proved both by its colour and its dryness, as if, at the same time that the cellular fibre which enters into its composition became more and more hypertrophied, the vessels had a tendency to become obliterated, either consecutively to the inflammation which might affect them, or in consequence of the compression to which they are subjected, or, lastly, because at the same time that the last bronchial branches being compressed, no longer receive any air, the vessels which pass over their parietes cease to convey blood to them, which could no longer find air to arterialise it.

Besides, anatomical observation can prove directly the obstruction and obliteration of a great part of the vessels of an indurated lung. Conjointly with my learned friend, Dr. Blandin, I drove a fine injection into the pulmonary artery of a phthisical patient, one of whose lungs contained in its upper lobe a tolerably extensive cavern, with considerable grey induration of the pulmonary tissue around it. The injection penetrated readily into the different parts of the lungs, except in the points where the induration existed. It was seen to stop at the boundaries which separated the latter from the portions of the lung still pervious ; however, in these latter portions, the matter of the injection had passed on as far as the smallest vascular ramifications.

On the difficulty which the blood experiences in traversing the lungs, when placed in the condition now pointed out, some morbid phenomena may depend. I should not be disinclined to think that some cases of hemoptysis, owing to simple sanguineous exhalation of the bronchi, arise from an obstacle to the free passage of the blood from the different divisions of the pulmonary and bronchial arteries into the veins of the same name. One might then compare the sanguineous exhalation which takes place on the surface of the bronchi to that which several experimentalists have produced artificially on the inner surface of the intestinal canal by tying the trunk of the vena portæ. The following fact may serve to corroborate this idea :—

In the month of May, 1825, I opened the body of a horse which had been but some hours dead. A great number of the principal divisions of the pulmonary veins of one of the two lungs were filled, and as it were distended by very dense clots, partly deprived of colouring matter, and closely adhering to the vascular parietes. All the physical characters of these clots, and particularly their adhesion to the parietes of the veins which contained them, inclined me to consider as certain, that they had been formed during the lifetime of the animal, similar in that to old clots, and seemed to progress towards the organisation sometimes found in the human veins. But in the bronchi of this same horse, and only in those which corresponded nearly to the obstructed veins, there existed a considerable quantity of frothy liquid, of a very remarkable red colour ; this same liquid filled a part of the trachea. Might not the exhalation of blood, or at least of its colouring matter, of which the bronchi of this animal were the seat, depend on the obstruction of the pulmonary veins? If, in this case, the relation of these two phenomena be looked on as probable, we should not be right in rejecting the idea that in phthisical patients the difficulty of the pulmonary circulation may occasion certain attacks of hemoptysis. We are far indeed from having anything rigorously demonstrated in this respect, and this is one of those conjectures, like several others, which ulterior researches will be able either to overturn or raise to the rank of an established truth.

From the obstacle to the free passage of the blood through the lung, stagnation of the blood in the right cavities of the heart again results as a necessary consequence ; thence, probably, the more or less severe palpitations of which several phthisical patients complain at different periods of their illness ; thence also, probably, the state of dilatation in which the right side of the heart of phthisical patients is also frequently found. The effects produced by the greater or less obstruction of the pulmonary arteries or veins seem to be limited here. There never results from it, for instance, a disturbance of the general venous circulation marked enough to produce dropsies of greater or less extent. Very rarely, in fact, do we observe, in phthisical patients, even mere œdema of the lower extremities; almost every time that we have observed this œdema carried to a certain degree, with or without accompanying ascites, with or without infiltration of the upper extremities, we have been able to detect the existence either of a disease of the liver, or of a disease of the heart, consecutive or not on the disturbance of the pulmonary circulation.

It is also to the difficulty of the pulmonary circulation that the red colour of the cheeks in a certain number of phthisical patients has often been attributed. This opinion does not seem to me to be well-founded. If this red tint of the cheeks was the result of the embarrassment of the circulation in the upper cava, it is evident that this tint should be so much the more marked as the disease becomes more advanced, because it is then that the pulmonary induration principally exists. Now what is observed is precisely the contrary. The circumscribed redness of the cheeks exists principally towards the commencement of phthisis, and again, even at this period, it is far from being constant : it appertains rather to the constitution called scrofulous than to pulmonary phthisis, and, in this case, we see it exist for a long time before any sign announces that the lung contains tubercles : according as these become multiplied and softened, according as the lung becomes disorganised around them, the redness of the cheeks, if it had existed, becomes gradually effaced, and is succeeded by a uniform pale tint of the cheek; it is this latter tint that is most frequently observed in the different stages of phthisis. Let us conclude then, that the redness of the cheeks of phthisical patients, a redness, moreover, which is much rarer in them than has been said, cannot be explained by the embarrassment of the pulmonary circulation. It is particularly, I repeat it, an attribute of the scrofulous constitution, and we can no more explain it in the individuals possessing this constitution, than we can tell why, in them, the nutrition of the alæ nasi, of the upper lip, and of the rami of the lower maxillary jaw, undergoes almost uniformly the remarkable modification which gives to these parts so characteristic an appearance.

It is difficult to conceive how, in a lung which has become partially impervious to air, the entire of the venous blood which passes through it, can, as in the healthy state of the lung, entirely undergo the change which constitutes arterial blood. If, as is very probable, the great act of hematosis takes place chiefly in the lung, it seems that in tuberculated lungs this hematosis must go on but imperfectly. Thus, then, it may be readily conceived how a period may come in phthisis when there is but very little blood continues to be formed, as is proved by the general discoloration of the muscular system, without there being any well-marked sanguineous congestion in any other tissue. To this small quantity of blood, and to the imperfect elaboration of that which does exist, we may again refer the constantly increasing deterioration of nutrition, properly so called, that extreme degree of marasmus, more marked in phthisis pulmonalis than in any other chronic disease, a marasmus which is not only the result of the complete disappearance of fat, but also of a real atrophy of several tissues, and particularly of the muscular system. Might not the remarkable attenuation which the parietes of the stomach present in several phthisical patients be nothing but simple atrophy, similar to that of the muscles, and always depending on the same cause? (See further in the article on the diseases which may complicate pulmonary phthisis.)

From the preceding considerations, it follows that the respiration of phthisical patients, at a certain stage of their disease, resembles that of certain animals, Batrachia, in which there is but a part of the blood brought back from all the parts towards the heart, which receives in the lungs the influence of the air; it is this partial respiration which physiologists consider as the principal cause of the low temperature of these animals. It appeared to me a matter of curiosity to ascertain whether in phthisical patients also the temperature was less raised than in other persons. I accordingly found that, in a considerable number of these patients, Reaumur's thermometer, placed under the axilla, did not rise above 29°; in some it did not go beyond 28°. This temperature, lower than that of the natural state, was moreover observed only in persons whose lungs contained a great many caverns, and were indurated in a great part of their extent. But I must say, that in other patients placed in the same conditions with respect to the lungs, the thermometer arose to between 31° and 32°, as in the healthy state.

Finally, is it not in this way we may explain the small size to which the heart is often found reduced in phthisical patients (I do not speak of the cases in which there is at the same time hypertrophy of the parietes)? This species of atrophy of the heart seems to be, like atrophy of the muscles of animal life, the result of the general deterioration which nutrition has undergone. It may also depend on this, that at a certain period of phthisis the heart no longer receives but very little blood compared to that which is sent to it in the state of health. At another period of phthisis, on the contrary, when much blood was still formed, and when obstacles to the circulation existed in the pulmonary parenchyma, the right side of the heart was dilated, and often also the parietes were simultaneously hypertrophied. Thus the vessels increase in size, which, under the influence of any cause whatever, come to receive more blood than in the normal state. At a later period this cause of increase of size no longer exists, and it may be conceived that the heart, after having been hypertrophied, may then not only return to its ordinary size, but again become atrophied, as happens to arteries or veins when traversed by a smaller quantity of blood. In this case, if I may say so, Valsalva's treatment is resorted to by nature.

SECTION III.

SIGNS AFFORDED BY THE COUGH.

49. Several authors have endeavoured to distinguish simple bronchitis from bronchitis with the formation of tubercles by the characters of the cough which shows itself in both these affections. Clinical observation shows that there really are cases in which the cough, which manifests itself in persons attacked with pulmonary tubercles, has characters not met with in the cough produced by simple acute or chronic inflammation of the bronchi. Thus in the first stage of phthisis, when the pulmonary parenchyma is as yet studded with only crude or very few tubercles, there is observed a short dry cough, the seat of which is often referred by the patient to the larynx, because it is only in this latter organ they experience some painful sensations before and during the cough ; but the physician must not deceive himself in this respect; we have often had an opportunity of observing persons, who in this way referred their cough to the larynx, as others referred the seat of the hemoptysis to this part ; they could not believe that their lungs were affected, so little uneasiness did they feel in the chest : however, after death, we found a great number of tubercles in the lungs ; the larynx often presented only a little redness, similar to that in the trachea and bronchi. It may be supposed that if the larynx seems to some phthisical patients to be the primary seat of several of the symptoms which they experience, and particularly of the cough, it is because by reason of the greater sensibility of the larynx the morbid impressions are more acutely felt by the mucous membrane of this organ than by that which lines the rest of the air passages. This greater sensibility of the larnyx is not mere conjecture ; first, anatomy alone should tend to make us admit it, since the larynx receives more nerves than the trachea and bronchi ; but further, introduce an instrument into the air-tube of a living animal, through an opening made below the cricoid cartilage ; direct this instrument upwards into the larnyx, the animal will evince its sufferings by its cries ; then carry the same instrument downwards into the trachea, and even as far as below the bifurcation of the bronchi, the animal will remain almost passive.

This short dry cough, which marks the commencement of a certain number of cases of phthisis, presents again another character which must not be overlooked ; it is this, that after it has ceased, it is very subject to return. The slightest cause is sufficient to recal it with the utmost facility. This sort of cough is scarcely observed in bronchitis without tubercles ; but does that prove that tubercles, existing previous to the bronchitis, occasion the frequent returns of the latter ? This opinion may be sustained, but it is not unanswerable ; for it may just as well be conceived that the short dry cough in question may be the result of a slight primary irritation of the bronchi, and that in consequence of a particular predisposition this irritation is liable to return, as in other persons we see attacks of angina return under the influence of the slightest cause. Again it may be conceived that, consecutively to these frequent returns of bronchial irritation, tubercles may develope themselves, which, once formed, shall in their turn become a permanent cause of the slight bronchitis which had first given rise to them, and probably then only the latter will become continued.

If, then, there be great probabilities to induce one to admit that the short dry cough, remarkable for its frequent returns, of which we have just spoken, oftentimes indicates only a particular form of bronchitis which precedes tubercles, we must conclude from this, on the one hand, that this species of cough should, in a great number of cases, be considered rather as capable of exciting a dread of the development of tubercles, than as announcing their actual existence. We must also conclude, on the other hand, that a severe cough returning in distressing fits, such as is produced by an intense bronchitis, may, if it be prolonged, excite an apprehension of the ulterior development of tubercles, as well as the preceding. Thus this accidental production may also be developed in the mesentery, either after very slight attacks of enteritis which, liable to frequent returns, announced their existence each time only by very slight and, as it were, fugitive symptoms, or after violent inflammation of the intestinal canal ; only here, as in the case of the lungs, observation shows that the first case is more frequent than the second. We dwell on these facts, because too much importance has been too often attached to the form under which a symptom presents itself, to diagnose, from this form, the existence of such or such an organic alteration.

50. At a more advanced period of the disease, several varieties are again observed in the cough. In several persons the cough remains dry for a very long time, even till death ; or at least it is accompanied only by a very scanty expectoration, consisting of a small quantity of mucus. We may conceive that it must be so, when, on the one hand, no tubercle has formed a cavity, and when, on the other hand, the bronchi, being but slightly irritated, merely secrete a little more mucus than in the state of health. In a certain number of cases the cough continues to be severe ; it returns in frequent and harassing kinks, which occur principally during the night or in the morning. There are some persons in whom the mere change of position in the bed, the act of speaking, or even that of drinking, brings back the cough in the form of prolonged kinks. This kind of cough cannot indicate such or such a state of the tubercles ; it depends principally on the intensity of the inflammation of the mucous membrane of the bronchi. In some children affected with pulmonary tubercles we have seen the cough assume a sort of convulsive form, and all the symptoms of hooping-cough appear. In this case we found no particular lesion in the larynx which could account for this unusual form of cough, and we could attribute it only to a particular disposition of the subject.

Other phthisical patients present a phenomenon contrary to the preceding. According as their malady progresses, and the pulmonary parenchyma becomes the seat of larger caverns, their cough becomes less intense and less frequent ; it no longer occurs in kinks, but merely the expulsion of each spit is preceded by a slight effort at coughing, which occasions not the least distress to the patients. Such persons then delude themselves with hopes of recovery, which hopes are vain no doubt, since, at a certain stage of phthisis, the cough usually presents those characters only when there exist in the lungs immense excavations which communicate freely and directly with large bronchial tubes.

51. Lastly, in some rare cases, of which, however, we have instances, tubercles arise and multiply in the lungs without their presence being in any way announced by cough. It is principally in the case where the pulmonary parenchyma came to be attacked with tubercles during the course of another chronic disease, or towards the end of an acute disease, that we have observed this complete absence of cough. We shall mention here the case of a young man who was affected with double chronic inflammation of the peritoneum and intestinal mucous membrane. This patient perspired copiously every morning from the head, neck, and chest : he complained from that time of a little dyspnœa. These symptoms,

and particularly the partial perspirations from the upper parts of the body, induced us to suspect in him the existence of pulmonary tubercles. When interrogated in reference to this matter he stated that a year before he had had a rather severe cold, but that for the last six months *he did not cough at all.* The sonorousness of the chest was in every part very considerable, the respiratory murmur was perfectly clear, but *stronger than in the normal state.* This latter circumstance was an additional reason for our supposing that in one or more points of the lung there existed an obstacle to the free entrance of the air into the pulmonary vesicles, and this obstacle, by reason of the sweats particularly, might consist in tubercles ; but how could it be positively affirmed ? The patient soon died of the abdominal affection. Up to the period of his death, nothing more was observed with respect to the chest, than what has been already noticed. The autopsy demonstrated in the intestine and peritoneum the lesions which had been announced (ulcerations in the ileum, cæcum, and colon, with tuberculous matter at the lower part of them, on their edges and around them, reddish softening of the gastric mucous membrane, sero-purulent liquid in the peritoneum). But still further we obtained a satisfactory proof of that which had been only suspected during life ; a great number of tubercles were scattered through both lungs, the size of which varied from that of a grain of millet to that of a nut ; most of them were in the crude state ; some presented considerable softening in their centres. Around the latter the pulmonary parenchyma presented either some red hepatisation, or well-marked engorgement ; elsewhere it was healthy, crepitating, and remarkable even for the small quantity of blood it contained. It was important to examine the state of the bronchi and of the other parts of the air-tube ; for since there had been no cough, it should be presumed that they should not be found to be inflamed : such was accordingly found to be the case. The mucous membrane of the larynx, trachea, large bronchi, and their ramifications, were found to be white through their entire extent.

Thus this absence of inflammation of the air-tubes might account for the absence of the cough : pulmonary tubercles may then exist without bronchitis. The preceding fact proves it ; but it also teaches (and this is an important circumstance) that antecedently, at a period not very remote, there had been considerable inflammation of the bronchi, to which the primary origin of the tubercles might be referred. Thus it is that in several children, but not in all children, as M. Broussais* has too positively stated, the tuberculous engorgement of the mesenteric ganglions is preceded by all the symptoms of enteritis ; but sometimes this latter ceases, and after death the intestine is found perfectly healthy, whilst the tuberculous affection of the mesentery survives the cause which produced it.

A little time after the death of the patient now mentioned, another individual of about the same age entered the hospital, who had recently arrived at Paris. He presented all the symptoms of what is called inflammatory fever : on examining the state of his different organs, there was detected in him a two-fold inflammation of the mucous membrane of the bronchi and of that of the intestinal canal, an inflammation more alarming for its extent than for its severity in each of the points which it occupied. The patient complained particularly of a frequent distressing cough, accompanied with a disagreeable pricking sensation behind the sternum and under both clavicles. This man assured us that, up to the time of his coming to Paris, he had always enjoyed perfectly good health. At the end of from twelve to fifteen days, after the employment of copious bleeding, the symptoms of the gastro-enteritis disappeared, and with them the fever declined. But the bronchitis continued, the strength did not return, and every evening the patient became hot, and had a general feeling of uneasiness, as if there then occurred a slight febrile disturbance. No sign announced any affection of the pulmonary parenchyma. M. Lerminier dreaded the development of tubercles. During the fifteen days following, the cough became less and less severe, and at last it disappeared altogether. No symptom any longer announced the existence of bronchitis; nor did any phenomenon indicate that any organ in particular was suffering; and yet his flesh and strength declined every day; the pulse was habitually somewhat frequent, without there being heat of skin; every evening the febrile disturbance became more marked. What ailed this patient? Was it idiopathic hectic fever? But this state is at least very rare. It seems to us more conformable to observation to admit that there existed in this case some organic lesion, the existence of which was not revealed by any local symptom. Certainly, such cases are much more frequent than those of marasmus and hectic fever, of which no appreciable material cause is found after death. However, at the end of a little time, the appetite, which had returned, was again lost, diarrhœa came on, then the patient was seized with a violent stitch in the side below the left breast, and he soon died with all the signs of a pleuritic effusion. It must be noted that in the interval which elapsed between the termination of the acute bronchitis and the commencement of the pleuritic pain, there was complete absence of cough. In the post mortem examination there were found numerous miliary tubercles in both lungs, the structure of which was sound in the intervening parts. The bronchi were not examined, which we regret much, in consequence of the absence of the cough. There was considerable purulent effusion in the left pleura, softening and slight injection of the gastric mucous membrane, reddish rugosities on the internal surface of the great intestine.

---

* It is certainly a very beautiful and a very just idea which attributes inflammation of the glandular organs, communicating more or less directly with the internal or external tegumentary membranes, to primary inflammation of the latter. Thus there is no doubt but the lymphatic glands situated in the vicinity of the mucous membranes, may become irritated consecutively to the inflammation of the latter, in the same manner as we see the lymphatic glands of the neck become swollen after erysipelas of the face or of the hairy scalp, and more so still after chronic inflammation of those same parts, as may be observed in several children affected with tinea. No doubt the salivary glands may become inflamed after stomatitis, the liver after duodenitis, the testicle after urethritis, etc. ; but it is not physiological to say that such must always happen. Observation disproves this too general an assertion. Do we not every day see the subcutaneous lymphatic ganglions become inflamed, swollen, and tuberculated in a primary way? Why should it not be the same with respect to the internal lymphatic ganglions, those of the mesentery for instance? It ill becomes our weak understanding to wish to assign precise limits to the acts of nature in the state of health as in that of disease.

If we analyse this case with respect to the succession and connexion of the morbid phenomena, we shall consider it as probable that tubercles were developed in an acute form consecutively to the intense bronchitis which complicated the gastro-enteritis at the time of the patient's entering the hospital. We cannot question the existence of these same tubercles at the period when *the cough no longer existed,* since the latter recommenced only five or six days before death, dating from the time the pleuritis commenced, and it would be absurd to suppose that tubercles could develope themselves in this short space of time. Finally, it is to the tubercles formed in the lung, and which indicated their existence by no local symptoms, that we must refer the great alteration of nutrition, and the constantly increasing wasting-away presented by this patient.

52. The existence of a certain number of sympathetic coughs is generally admitted to be connected with the affection of different organs, such as the liver, stomach, uterus, &c.; thence the terms hepatic, gastric coughs, &c., given to those species of coughs which exist, say authors, without any alteration of the lungs or bronchi, and which seem to be the result of a mere nervous consent of parts. I deny not the existence of this sympathetic cough; but I think its frequency has been very much exaggerated, and that in several cases of this kind which have been related, a more attentive examination would have discovered an idiopathic lesion of the pulmonary parenchyma or bronchi, which often escaped investigation so much the more readily, inasmuch as, supervening as a complication during the course of a chronic affection of the stomach or liver, it was not then announced by any well marked symptoms. (See the article regarding the complications of phthisis.)

SECTION V.

SIGNS AFFORDED BY THE EXPECTORATION.

53. When speaking of the utility of examining the expectoration, as a sign in diseases of the chest, Vanswieten says : *Certum est quòd in variis pectoris morbis sputa attentam mereantur considerationem.* This assertion is far from being equally accurate for all affections of the lung. The expectoration, a characteristic and true pathognomonic sign in acute pneumonia, is no longer of any value in chronic pneumonia : it affords but negative signs in pleuritis, except in the rare case where the effusion formed in the pleura has escaped through the bronchi. Lastly, in the different stages of pulmonary phthisis, it does not differ, in several cases, from the expectoration of simple acute or chronic bronchitis. However, there are certain circumstances in which the expectoration, in phthisical patients, may furnish more than one valuable hint. Most authors seem to us to have treated of it too lightly. Have the sputa, in phthisis, appeared to them not to present sure characters from which it was possible to establish the diagnosis of the disease ? or did it seem to them almost impossible to find terms which could give a faithful description of it ? Uncertainty in the characters, difficulty in the description—such is the double rock against which most authors seem afraid of striking. When, in fact, we give ourselves up to an attentive examination of the expectoration of phthisical patients, we arrive at this rather unsatisfactory result, namely : that the mere inspection of the sputa can afford probabilities more or less strong with respect to the existence of phthisis, but scarcely ever entire certainty. The paragraph which we are about to devote to their examination shall be but in some measure a development of this proposition. It will besides be readily conceived how uncertain must be the signs afforded by the expectoration in phthisis, if we reflect, — first, that all sputa, at the commencement of this disease, and the greater part of them, in its subsequent periods, are but a product of the bronchial secretion ; secondly, that the mucous membrane of the bronchi may also yield a liquid, which, in certain cases, approaches extremely near in its appearance to the liquid formed in a tuberculous excavation.

54. Two methods have been pursued in order to distinguish the sputa of phthisis from those which belong to other diseases of the lung. Some have had recourse to the employment of chemical reagents : others, and certainly the greater number, have confined themselves to the examination of their physical properties.

55. The presence of pus in the sputa for a long time appeared to physicians a pathognomonic sign, which once ascertained, seemed to them infallibly to announce the existence of pulmonary phthisis. But the numerous efforts which have been made to distinguish pus from mucus in the expectorated matter have proved hitherto fruitless *. Could it be otherwise ? We think not. Nothing, to be sure, is more dissimilar than good pus coming from a phlegmon, and the mucus exhaled by a healthy membrane, and chemical analysis may easily point out the difference. But the distinction of these two products becomes very different indeed when we wish to submit to analysis the mucus secreted by an inflamed membrane : it is then a liquid which presents in its composition as many varieties, as there may be different modes of irritation in the membrane which yields it, and which ultimately transforms itself imperceptibly into a liquid

---

* Even though they were effectual, we should be still as far as ever from a diagnostic mark of phthisis, as it is well known that pus is present in the expectoration when bronchial disease only exists : it is equally well known that pus in the expectoration does not form an essential character of tubercular phthisis—Trans.

altogether resembling pus, as is seen in the inflammation of the mucous membranes of the lung, urethra, and eye. How, after that, can we hope for a constant and positive result?

We however shall now give an account of some attempts made by ourselves.

The most ancient, and the simplest experiment consists in placing the expectorated matter in contact with common water or with salt water, in which bodies lose a greater part of their weight. It is said that the mucus floats and the pus is precipitated. We have often repeated this experiment with several kinds of pus and mucus. The pus secreted by the pleura and peritoneum fell to the bottom of the water in the form of large flocculi. We have also seen the matter taken from tuberculous cavities fall to the bottom of the water; but, different from the pus of serous membranes, it was there divided into a number of small lumps of a dull white colour; the water at the same time lost its transparence, and acquired a well-marked milky tint. After allowing the liquid to remain perfectly at rest for several successive days, it was observed gradually to recover its transparence. The water was never rendered turbid by the pus extracted from the pleura and peritoneum.

Some mucus coming from the nasal fossæ of a healthy person presented nearly the same appearance as the pus of serous membranes: it first remained suspended in the midst of the water; then, like the pus of the pleura, it fell to the bottom without dividing, and without rendering the liquid turbid.

We collected from the bronchial membrane a considerable quantity of opaque mucus, thready and mixed with bubbles of air. We saw it sometimes float in water, and sometimes remain suspended in the midst of the liquid by long filaments which extended to the surface of the latter. After a short time, the air, mixed with these filaments, which kept them on the surface of the water, disengaged itself, and the mucus was precipitated to the bottom in the form of large flocculi; at other times we saw it instantly fall to the bottom of the liquid, as real pus would have done, according to authors. Whether it floats, remains suspended, or sinks to the bottom, this mucus disturbs the transparence of the water only by great and long-continued agitation, a phenomenon the reverse of that presented by the puriform matter obtained from caverns. The liquid then acquires a slightly milky tint.

These facts being known, let us see how the sputa of simple bronchitis and those of phthisis will be affected in reference to water.

The sputa of chronic bronchitis present the same varieties in this respect as those just presented to us by the mucus collected on the surface of the bronchi. In a considerable number of phthisical patients, whose lungs contained some crude tubercles, softened or now excavated, the sputa still presented the same phenomena. But in others, whose lungs contained larger caverns, the sputa usually separated into two portions, one of which instantly fell to the bottom, disturbing the transparence of the water, and forming a white or greyish deposit, as the tuberculous matter obtained from a cavern had done. The other portion first floated; but at the end of from ten to twelve hours, it was also found to be precipitated (a result similar to that which certain species of mucus had yielded), and the transparence of the water was but slightly disturbed. These facts seemed to us to indicate, in the sputa of these patients, the existence of two given matters: first, that of mere mucus; secondly, that of a matter more or less similar to pus furnished by a tuberculous excavation. We were then curious to see what would happen if we mixed these two substances in different proportions. Accordingly, a certain quantity of softened tuberculous matter, taken from a cavern, was mixed with some mucous sputa belonging to a patient affected with acute bronchitis. Before the mixture had been accomplished, the sputa remained suspended in the water, the transparence of which was still preserved. After the mixture, they were precipitated, and the water acquired a milky appearance. Thus, in this experiment, the mucus, once mixed with the tuberculous matter, was carried to the bottom with it. In other experiments, on mixing only a very little tuberculous matter with a considerable quantity of mucus, and care being taken that the mixture should be well made, no precipitate at first took place, as if in this case the mucus had retained the pus on the surface; but, by shaking them well, we saw several clots of a dull white separate from the mixture and fall to the bottom.

From these facts the following conclusions may be drawn :—

1st. In a great number of phthisical patients, the sputa are constituted only of mucosity supplied by the mucous membrane of the air-passages; but in consequence of the extremely variable qualities of this mucus, the matter of the sputa, when treated with water, may exhibit very different phenomena—it may float, remain suspended, or be thrown down; this last circumstance cannot then suffice to demonstrate the presence of tuberculous matter in the sputa. It must be said, however, that sudden precipitation to the bottom of the water is much more common for the latter than for mucus.

2ndly. In other phthisical patients the sputa are constituted of a mixture of mucus and matter supplied by softened tubercles or by caverns. When mixed with water they will be differently affected, according to the proportion and more or less intimate mixture of these two elements. However, the sudden transformation of a white precipitate, with disturbance of the transparence of the water, may, in general, indicate the presence of a greater or less quantity of tuberculous matter in the sputa.

Let us follow up this subject with chemical re-agents.

We have brought in contact with dilute sulphuric acid some softened tuberculous matter, pus secreted by the parietes of cavities, some sputa of phthisical patients, and those of patients labouring under simple chronic bronchitis; finally, some mucus taken from the pharynx and nasal fossæ; all these substances were equally dissolved. The acid first became red, then black; its temperature was raised. If we pour on this solution a small quantity of water, the liquid assumes a greyish white colour; if more water be added, we perceive a copious grumous deposit gradually formed, and at the end of some hours the liquid is colourless and transparent. Darwin had stated that in this experiment the pus might be distinguished from mucus, because the first formed at the bottom of the vessel a greyish sediment, whilst the second remained suspended in the form of small flocculi. We have not remarked this difference.

Ammonia poured on the purulent matter of the cavities dissolves it rapidly. The liquid assumes the appearance and consistence of a transparent colourless jelly of great tenacity. This fact is noticed in Thomson's Chemistry as one of those which may best serve to characterise pus. The mucus is equally dissolved in ammonia, but the mixture does not assume the jelly-like appearance. On submitting the sputa of phthisical patients to this experiment, we observed this appearance only twice. In most of the cases the solution took place without the liquid increasing in consistence, whilst at other times the solution did not take place at all.

Already, since the time of Aretæus, and before him, several processes were employed to distinguish the sputa of pulmonary phthisis from those belonging to other affections of the lung; but this great observer attached but little importance to these different processes. *Quicumque aut igne aut aquâ sputa explorant ac notant, hi haud ita multum phthoën mihi dignoscere videntur; namque visio quolibet alio sensu certior est.*

56. We think with Aretæus, that it is chiefly to the particular appearance of the sputa, to their form, consistence, colour, odour, composition, etc.; in a word, to the aggregate of their physical properties, that we must have regard in order to recognise the sputa which belong to tubercular degenerescence of the lungs.

57. At the onset of phthisis, when the continuance of the cough, the frequent

attacks of hemoptysis, the emaciation which begins to become perceptible, the febrile disturbances which manifest themselves at intervals, seem to announce a more serious lesion of the lung than simple bronchitis, the sputa as yet present no character. A dry cough is observed in several patients ; in others it is accompanied from the commencement with catarrhal expectoration ; sometimes, also, the latter is opaque and extremely variable, as in chronic bronchitis ; sometimes, though now having continued for a considerable time, the sputa constantly remain those of acute bronchitis[*] ; this latter circumstance is worthy of remark, as being one of those which may incline one to dread the existence of tubercles when nothing yet gives any certainty of them. But what must never be lost sight of is, that in this first stage of phthisis the sputa may present themselves indifferently with all the characters already noticed.

However, when the cough has now continued a certain time, and when the matter of expectoration is attentively observed every day, we observe at intervals, in the midst of the turbid mucosity which forms it, small clots (grumeaux) of a dull white, or bordering a little on yellow, of considerable consistence, the size of which varies from that of a very small pin's head to that of a pea. Bayle compared them correctly enough to well-boiled rice. Their existence was remarked by Hippocrates, who compared them to grains of hail. According to him they indicated phthisis, and had a great tendency to become purulent. Baglivi also strongly insisted on the presence of these whitish or yellowish granulations in the sputa of persons threatened with phthisis.

It would be easy to confound the small clots in question with others of the same size and almost similar appearance, which are often expectorated during the course of the most simple pulmonary catarrh, or which are even thrown up by persons who do not cough. We have already said in the preceding part that these clots came from the tonsils, or else that they were a mere product of the secretion of the mucous membranes of the cheeks and pharynx. No doubt they are observed much more frequently, whatever may be said of them, than those formed by fragments of tuberculous matter ; to distinguish them from one another, the great friability and cheesy appearance of the latter have been opposed to the viscidity and considerable tenacity of the former: these distinctive characters are real in a certain number of cases ; but we must not attach too much value to them. In fact, observation has proved to us, that under some circumstances, the mucosity ordinarily secreted by the follicles spread over the surface of the gastro-pulmonary membrane, may come from these follicles so altered as to present entirely the appearance of the sebaceous matter formed by the cutaneous follicles in their normal state : it may even sometimes acquire the consistence, the colour, in a word, all the physical properties of plaster (slâtre) saturated with water[†]. From these facts it follows that it is only with a certain degree of distrust that we should make the clots mixed with the sputa in question depend on tubercles, when no other sign announces the existence of tubercles.

Often again, at the onset of phthisis, or, more correctly speaking, when it is only dreaded, the sputa present other peculiarities, to which greater or less importance has been attached. Thus, it is not unusual to observe long fine delicate streaks in the midst of the colourless, thready, transparent, or turbid liquid which then forms the sputa ; at other times these streaks furrow the more opaque mucus which constitutes the greater part of these same sputa, and from which they are distinguished by their dull white or slightly yellowish colour, similar to the colour of the clots already described.

In persons presenting such an expectoration we have ordinarily found the lungs filled with small tubercles, for the most part hard, some of which already

[*] For the characters of these sputa see preceding part.

[†] It is in the horse particularly that we have had an opportunity of ascertaining these remarkable modifications of the matter secreted by the mucous follicles.

commenced to soften at their centre. Sometimes we were able by careful dissection to discover very small bronchial tubes of almost capillary minuteness, which opened into the small cavity in which the tuberculous matter was contained.

If we now endeavour to connect the nature of the expectoration with the state of the lung, we shall be induced to consider as probable that the sputa already contain a small quantity of tuberculous matter, which presents itself under various forms (in clots or in threads), according to its degree of softening, according to the form and size of the opening which has given exit to it. Having once reached the small ramifications of the bronchi, it may be supposed that it soon makes its way into the larger, and there mixes itself with the mucus without being confounded with it. All this is, no doubt, very admissible : but in the same manner as the clots already mentioned, the streaks or filaments which often furrow the sputa of persons considered phthisical, are far from always having their source in tubercles ; we have actually observed them in cases where the autopsy proved that there was not a tubercle in the lungs, and we think that these whitish streaks, considered by several persons as a product of tubercles which are commencing to soften, are much more frequently found in small bronchial ramifications, whose secretion may differ from that which takes place in larger tubes.

58. From what goes before, it follows that as long as tubercles, even when softened, do not communicate freely with the bronchi, the sputa can furnish but very doubtful characters with respect to ascertaining the existence of phthisis. Can the expectoration illustrate the diagnosis with more certainty when the lungs are already filled with cavities ? This is what we must now examine. Here two cases may present themselves :—1st. A wide communication may be set up suddenly between a softened tuberculous mass and a bronchial tube ; 2ndly, this communication, at first very small, may enlarge but slowly, and the passage of the tuberculous matter into the bronchi takes place but gradually. In these two cases the sputa present themselves with a different and a more or less characteristic appearance.

The two following observations present examples of the first case :—

CASE 6.—*Sudden expectoration of a large softened tuberculous mass (vomica)—Death by asphyxia.*

A middle-aged man, who was now in the hospital for the last fifteen days, complained of having had for a considerable time a dry distressing cough, which, joined to some dyspnœa, together with a hectic fever as yet but imperfectly marked, announced the existence of commencing phthisis pulmonalis. All at once, in the midst of a violent kink of coughing, he expectorated a great quantity of a grumous pus, the accumulation of which in the air-passages soon carried him off by asphyxia. We found the two lungs filled with miliary tubercles : some of a larger size were beginning to soften. Still further, in the midst of the upper lobe of the right lung, there was found an excavation almost entirely empty, capacious enough to contain an apple, and communicating by a broad opening with a bronchial tube, which entered almost immediately into the principal bronchus of this lung.

It is probable that in this case the matter came almost entirely from the cavity formed towards the summit of one of the lungs. The perforative ulceration of the bronchus did not take place till after the complete softening of a large tuberculous mass, so that as soon as a passage was open to it the latter might be all at once entirely evacuated. Here the expectoration was characteristic.

CASE 7.—*Copious puriform expectoration suddenly occurring, and coinciding with a loud gurgling.*

In another individual the phthisis pulmonalis was for a long time indicated only by some cough, with the expectoration of acute bronchitis, by frequent attacks of hemoptysis, by dyspnœa, and lastly, by a rather rapid emaciation. The sonorousness of the thoracic parietes was everywhere perfect, and the respiratory murmur, which was very intense, was altered only by a little moist bronchial râle, which was heard in different points. Such was the state of this patient when, all at once, towards the evening, he was seized with a fit of coughing much more violent than usual, in the midst of which he had another attack of hemoptysis. The latter ceased gradually at the end of some days. But at the same time that the spitting of blood disappeared, the patient commenced to expectorate a puriform greenish white liquid in very great quantity, in the midst of which small whitish friable fragments floated, the debris very probably of a tuberculous mass. From the first day that this new expectoration manifested itself, a very loud gurgling without pectoriloquy was heard for the first time below the right clavicle, in the space included between this bone and the breast. The following days this gurgling was still heard : the expectoration continued to be copious and puriform ; but the small clots which floated in the midst of the pus during the first days were no longer found there. Henceforward the patient rapidly arrived at the last stage of phthisis, and soon died. By a rather striking anomaly, he scarcely had any sweats. There was found an immense cavern in the part where, during life, the gurgling was heard ; around it the pulmonary parenchyma was hardened only for the space of some lines. In the two lungs there were, besides, numerous tubercles in different stages of crudity or softening.

Here, again, the change which took place suddenly in the nature of the expectoration announced the time when a tuberculous mass, entirely softened, was discharged through a large perforation of the bronchi. In this case, the clots which floated in the midst of the expectorated purulent matter presented the most perfect analogy to the matter often found in cavities. These clots ceased to appear when the tuberculous mass was discharged, and when the matter of the expectoration now consisted merely of pus secreted by the parietes of the cavern. Observe, again, that the period at which the gurgling appeared coincided perfectly with that at which the tuberculous expectoration showed itself ; this gurgling ceased not to be heard, a circumstance which announced the extreme activity of the secretion going on in the parietes of the cavern, since, though continually emptying itself, it was still constantly filled.

This sudden discharge of a large softened tuberculous mass through the bronchi is not that which most ordinarily happens ; in the greater number of cases it is only gradually that this discharge takes place, and then it is only gradually also, and in a much less striking manner, that the matter formed in the tuberculous cavity makes its exit from the latter, and is expectorated with a variable quantity of bronchial mucus with which it is usually mixed. It then becomes more or less difficult to distinguish its presence. But what term can be found to mark the infinitely varied forms which the sputa may then assume ? Their principal differences depend, no doubt—1st, on the manner in which the bronchi communicate with the tuberculous excavation ; 2ndly, on the number, length, breadth, and mode of division of the bronchial tubes which the liquid must traverse before it reaches the trachea ; 3rdly, on the quantity and quality of the bronchial mucus with which it is mixed ; 4thly, on the longer or shorter time it tarries in the bronchi before it is expectorated. In several phthisical patients the substance of the expectoration is principally formed of more or less considerable masses which remain suspended in the midst of a turbid serosity. This species of sputa is designated in the La Charité by the name of *flocculent* (floconneux). In other persons the matter of expectoration is very different ; thick masses, with rounded edges, precisely circular, all equal in diameter, and continuing perfectly distinct from each other, remain on the surface of a liquid more or less turbid, somewhat resembling a solution of gum, which is perceived in the nearly equal spaces which they leave between them. In consequence of their arrangement these have been called *nummular* sputa. Examined with the naked eye, or, what is better, by a magnifying glass, these sputa often appear formed by the union of a crowd of small points, which seem capable of again being divided into other still smaller points ; they are small molecules, somewhat like those observed when tuberculous matter more or less completely softened is treated with water. These points, of a dull white colour, are combined by a mucus which is sometimes greyish and semi-transparent, sometimes yellow and greenish, and completely opaque, so that the entire sputum appeared shaded with different colours—*variegatum*, as the ancients said. Whatever appearance these sputa assume, we conceive that we express the manner in which they form correctly enough, and that we give a tolerably just idea of their habitude when we designate them, with M. Lerminier, by the generic term, *compound sputa.*

59. The pus which fills certain cavities is remarkable for its colour, which is that of a dirty grey, ashy, and sometimes reddish ; this latter tint seems owing to a certain quantity of blood which is mixed with it. This liquid, which has much resemblance in its consistence, colour, and usually fetid odour, to the sanious pus which flows from old ill-conditioned sores, or from certain white swellings of the joints, is evidently secreted by the parietes of the caverns ; most ordinarily small clots of a dull white, the debris of the tuberculous mass, are suspended in the midst of this liquid. The sputa of several phthisical patients are sometimes formed partially or entirely of the matter just described. Being scanty at first, this matter presents itself only from time to time in isolated patches, in the midst of sputa of different appearances. By degrees it becomes more profuse, and ultimately forms them almost exclusively. Then the expectorated matter presents the greatest resemblance to the matter contained in caverns ; it is, however, always a little more consistent, which seems to depend on its mixture with bronchial mucus. It is a sort of a homogeneous, greyish or reddish porridge (purée), fetid or inodorous, in the midst of which there are often observed scattered some debris of tuberculous matter, such as are found in caverns.

This kind of expectoration, incontestably the most characteristic, is a sign that the patient has arrived at the most advanced stage of pulmonary consumption. We then see some phthisical patients for whom it is enough to lie on the side opposite to that on which the largest tuberculous excavations exist, to throw up instantly, and in great quantity at once, the liquid which fills them ; one would say it was a pleuritic effusion, which suddenly makes way for itself through the bronchi. One of these patients assured us that he really felt his lung empty itself, when, after having remained for some time lying on the right side, he placed himself on the left side. We found in the right lung of this person an immense cavity still half-full of the liquid of which the sputa consisted, and communicating with a very large bronchial tube, which poured it almost directly into the trachea.

We should mention, however, that we have sometimes opened phthisical patients who had presented the preceding expectoration, and in whose lungs no great cavity existed. But in this case we have uniformly found a number of small excavations filled with a matter similar to that of the sputa, and communicating with bronchi of a greater or smaller size. They were numerous enough to be considered as the source of the copious expectoration which had taken place during life.

60. When instead of presenting itself in the latter periods in the form of a homogeneous pus, the sputa have continued to appear separate, and to float on a copious serum, it is common to see them suddenly change their character forty-eight or twenty-four hours before death. The most liquid part disappears, and the sputa form at the bottom of the vessel a flattened mass, of a dirty grey colour, not detaching itself from the vessel when inverted.

61. At other times, a little before death, every species of expectoration is suppressed, and if at the same time the other symptoms become aggravated, if—above all, the strength diminish suddenly—this suppression must be considered as the worst omen.

The suppression of the expectoration may here, as in pneumonia, depend on two causes. Most frequently the patient, having arrived at the last stage of marasmus and debility, has no longer strength to expectorate. The liquid accumulates in the larynx, trachea, and bronchi, and the patient dies in a state of asphyxia. At other times the patient ceases suddenly to expectorate, without any râle being heard in the trachea. At the same time the gurgling ceases all at once to be heard, where some hours previously the ear detected it in the most evident manner. In this case, it must necessarily be admitted that the liquid which filled the cavity has been re-absorbed. Thus sub-cutaneous purulent collections, appreciable both to sight and touch, sometimes disappear in a very short space of time. We have met vast cavities entirely empty in several phthisical persons, whose expectoration was thus suppressed a little time before death.

62. We have still to notice some more or less rare particulars which the sputa of phthisical patients present in their composition.

It is a vulgar opinion that portions of the lungs are found in the expectoration of phthisical patients ; this case is much rarer than persons unconnected with the medical profession think ; it is, however, a real case. Let us call to mind first, that we have sometimes found in the midst of a tuberculous excavation, real fragments of pulmonary substance, which had been probably detached from some bands which traversed the cavern ; such a separation may take place without hemorrhage, in consequence of obliteration of the vessels. More frequently we meet these same bands which no longer hold to the rest of the pulmonary parenchyma but by a very thin pedicle, which is broken by the slightest handling. Besides, we have also seen other diseased organs, in a state of degenerescence, broken and detached as here by large fragments, which were then expelled when there was an open communication. Thus in recently opening the body of a woman who died of cancer of the uterus, we found in the cavity of its neck, which was very much dilated, a considerable portion of encephaloid tissue, which was detached in one single mass from the cancerous parietes of the organ.

These facts being known, it may be conceived that a fragment of pulmonary parenchyma, once free in a cavern, may make its exit from it through an opening of a bronchus, and finally be expectorated.

What we have just said of the parenchyma of the lung, we shall also say of the different parts which constitute the parietes of the bronchi ; the latter, when struck with inflammation, may become so far disorganised that the cartilages, at first exposed by the destruction of the mucous membrane, may themselves become detached in fragments more or less extensive, which having become free in the cavity of the bronchus, shall then be easily expelled by expectoration. We shall return to this subject at a future period.

63. In the midst of the ordinary expectoration of phthisical patients, we have sometimes met species of membranous concretions, similar to those of croup. We must not confound these debris of false membranes with portions of hydatids, which may also be given up by expectoration, of which we shall presently cite some instances. Usually these false membranes appear in the sputa only at long intervals. Only once have we seen them, in much larger quantity, become every second or third day mixed with the sputa for more than a month. The patient presented all the symptoms of pulmonary phthisis already in a very far advanced stage : a gurgling, which was very loud, and circumscribed between the right clavicle and breast of the same side, indicated at this point the existence of an immense cavity. The cough, which was frequent, returned in very painful fits : voice completely gone. Two or three days did not pass without the patient expectorating with more or less effort some membranous shreds of an irregular form and white colour, without trace of organisation : some exertion was necessary in order to tear them. The largest expectorated were more long than broad ; they were about three inches in the former diameter, and one in the second ; one of

them was a little rolled on itself. Others were so small as not to be six lines in diameter in every direction. This patient, who, in all probability, had but a little time to live, wished to leave the hospital, and we lost sight of him. It would have been curious to verify in what part of the air tubes the numerous false membranes which he had expectorated were formed: was it in the larynx itself, as his voice, which was extinct, might have made us suspect? and was this individual affected with a sort of chronic croup? Did this formation rather take place, either in the trachea, or in different bronchial ramifications? Lastly, might it not even be admitted that the debris of false membranes expectorated came from the interior of the caverns? We know that the parietes of the latter are most frequently lined by a whitish membranous layer: is it not this which was detached in fragments and became mixed with the matter of expectoration? These different suppositions are all more or less admissible; besides, there have been already cited several examples of chronic bronchitis existing in children, or in adults, and accompanied by an expectoration of false membranes which, under some circumstances, retained the form of the bronchial branches whose parietes they lined. These facts prove, among other things, that the formation of false membranes on the surface of inflamed mucous membranes, depends not solely on the intensity of the inflammation; here, in fact, they are produced in abundance under the influence of a simple chronic inflammation.

64. Calculous concretions are sometimes expectorated during the course of phthisis: our own observations incline us to admit that it is most frequently in persons affected with pulmonary tubercles that this expectoration takes place. It may show itself at different periods of their disease. We have the case of a young person (a young Greek) who expectorated small calculi, at the same time that the first symptoms of phthisis showed themselves in him; but this seems to us the most uncommon case; and it is ordinarily only at a more advanced period of pulmonary consumption that patients sometimes expectorate calculous concretions. We have seen, for instance, a girl eighteen years of age, who had arrived at the last stage of marasmus, with immense cavities in the lungs, expectorate, only two days before her death, a calculus with an irregular surface, and the size of a small kidney-bean. The expectoration of this calculus was neither preceded nor followed by any unusual phenomenon.

All the individuals in whose expectoration we observed calculi, were young persons; so that, in this respect, our observation is not in accordance with that of the authors who consider this kind of expectoration as most common in old persons.

The size of the pulmonary calculi is very variable: some have been observed which scarcely equalled the size of a grain of millet; others, still rarer, were of the size of an ordinary kidney-bean. We read in the acts of the Academy of Copenhagen, the history of a woman, who, in a violent fit of coughing, threw up a stone as large as the first phalanx of the thumb. Morgagni states he saw a pulmonary calculus as large as the stone of a peach; it had been expectorated in the midst of a very severe fit of coughing (*conatu immani*). The patient declared that he very distinctly felt it ascend from the right lung into the trachea. Shenkius speaks of a young woman, fourteen years old, who expectorated a calculus as large as a nut.

The number of stony concretions expectorated are in the inverse ratio of their size. We meet in the *Dictionnaire des Sciences Médicales* (Article, Cas rares), the case of a phthisical patient who, for the last eight months of his life, expectorated upwards of two hundred small stones. A young woman, whose case is given in one of the numbers of the *Bibliothèque Médicale* for 1820, expectorated in three months twenty-two pulmonary concretions, the largest of which was the size of a cherry. M. Portal speaks of a person who expectorated more than five hundred calculi ; the first discharged were not larger than a grain of millet ; he then gave up others as large as a pea.

The form of the pulmonary calculi, their colour, and other physical properties, are no less variable. Sometimes they are small, gritty, friable masses, resembling plaster saturated with moisture, readily crumbling under pressure of the finger ; sometimes they have much greater hardness ; a certain degree of force must be used to break them. Sometimes they resemble grains of sand, or, as some say, portions of the hardest flint (we have never seen any of this latter species). They may be oval, cylindrical, globular, pyriform. They are often observed to be marked on their surface with numerous asperities, thus bearing some resemblance in their form to the mulberry calculi of the bladder. Most of these concretions are of a greyish white colour. We once saw some which were dotted as it were with a number of small black points.

Almost all the pulmonary calculi hitherto submitted to chemical analysis, have been found to consist of phosphate of lime, combined with a little animal matter. It is only in some very rare cases that the existence of carbonate of lime has been detected.

What is the origin of the expectorated calculi ? what is their seat in the lung? There are cases where the answer to this question is easy. Several of these calculi appeared to be produced in the bronchial ramifications, as is attested by their branching form, resembling that of several renal calculi, which occupy at once the pelvis and several calices ; we may conceive also that it must be in the mucus of the bronchi as of the other liquids of the living body, in most of which calculi are seen to become developed. One may suppose such to be the origin of these numerous concretions, which have been sometimes expectorated during a longer or shorter space of time without any perceptible derangement of the health, before, during, or after their expulsion. Aretæus had already remarked that several persons whose sputa contain small calculi, experience no alarming consequence from them. Olaüs Borrichius has cited the case of one of his friends, who for twelve years used to expectorate from time to time small stones, after a fit of coughing, without his health being injured thereby. Such was also the case of the individual whose case has been already cited from M. Portal.

Several other calculi, though also having their seat in the bronchi, may nevertheless have a different origin from the preceding. From a fact to be presently mentioned, we are inclined to suspect, that some of the calculi thrown up by expectoration are nothing else but ossified bronchial cartilages. The following is the fact on which we found this conjecture :—

A man about forty years of age died of phthisis in the La Charité ; he had had frequent attacks of hemoptysis, and in the midst of one of them he died. On opening the bronchi in their different ramifications, we were struck with the size and consistence which the thick cartilaginous points had acquired, which in the normal state traverse the parietes of the small bronchi. Several of these points had acquired real bony consistence. Two of them were no longer covered by the ulcerated mucous membrane, and they were so moveable that, by drawing them gently with a forceps, they were readily brought into the cavity of the bronchus. It is not unreasonable to admit that such a separation might have been effected spontaneously during life, and thence the small ossified cartilage was changed into a calculous concretion, of which the patient should free himself by expectoration. It is thus that there have been sometimes found, floating freely in the cavity of an artery, osseous concretions detached from its parietes. It is thus also we may explain the formation of those bony or cartilaginous concretions found perfectly free on every side in certain joints. Not long since, on opening the body of a woman, we met a rounded concretion, about the size of a pea, which with respect to its origin, may be assimilated to the preceding ; it was entirely free in the cavity of the peritoneum, where it was seen to float in the vicinity of one of the ovaries.

Under other circumstances, the expectorated calculi may come directly from a tuberculous excavation where they were produced. Twice, in fact, we have found in the midst of large caverns filled with purulent liquid, a hard calculous concretion, of the size of a hazel-nut, the surface of which was marked with numerous asperities. These caverns communicated with the bronchi by large openings, and it is probable that if the patients had lived a longer time, these calculi would have been rejected by means of expectoration.

Finally, there are some calculi, and these are not the least numerous, which seem to be produced in the midst of the parenchyma itself, in which they are as it were implanted. However, if regard be had to the ramifying form of these calculi, if we compare their figure with that of the culs-de-sac which terminate the bronchi, such as they are represented in Reissessen's work, we shall be inclined to think that here again the concretion has its seat in the ultimate extremities of the bronchial tree, in the air-vesicles.

There is another remarkable fact with respect to these calculi, which appear to be thus produced in the midst of the pulmonary parenchyma—it is that they are almost always mixed with tuberculous masses. Attentive observation leads one even to admit that many calculous concretions were at first but tubercles, which gradually became hardened by reason of a change in their chemical composition. In fact, in a lung where there are found several calculi placed in the centre or in the vicinity of tuberculous matter, we see in other points this same matter beginning to lay aside the characters of ordinary tubercle; it resembles plaster very well softened in water, with which it is saturated; but it seems that the molecules constituting the tubercle which has passed into this state have lost their cohesive power; they are separated from each other, and resemble small grains disunited by a more liquid substance. Analysis demonstrates in this variety of tubercles a little phosphate of lime combined with a great quantity of water and animal matter. By length of drying the water is evaporated, the molecules approximate more and more, and this mass, still half liquid, ultimately acquires a stony consistence. Numerous trials have satisfied me of the correctness of these facts. What takes place before our eyes under the influence of mere physical evaporation, seems also to take place in the lung under the influence of a process of absorption, which carries away from the tubercle its most liquid part, at the same time that a more considerable quantity of phosphate of lime is secreted. It is certain at least that this successive change of the tubercle into a calculus may be very easily traced in some lungs. It may thence be conceived how the expectoration of calculous concretions is so often accompanied by the symptoms of pulmonary phthisis.

This change of the tuberculous matter into calculous seems capable of taking place even in cases where there has been softening of a greater or less mass of tubercles, which, having been discharged through the bronchi, has left in its place a greater or less excavation. We have a case which warrants us in this statement.

From the different observations just made it follows—

1st. That the expectoration of a greater or less number of calculi is frequently, though not constantly, united with the existence of pulmonary tubercles.

2ndly. That the serious symptoms which precede, accompany, or follow the expectoration of these calculi, depend much less on the presence of the latter in the pulmonary parenchyma, than on the simultaneous existence of tubercles. We know of but very few cases where symptoms of phthisis have become manifest consecutively to the existence of simple calculi in the lungs. Bayle has cited but one single instance in the thirty-third case of his work, and yet it might be objected to him that the *cretaceous moist matter* surrounding the calculi scattered through the pulmonary parenchyma had been at first real tuberculous matter; this consequence, which Bayle did not draw, might result from the facts already cited by us. The calculous phthisis of Bayle is then a disease at least very uncommon: we admit the possibility of it, though we know not of any positive facts to demonstrate its existence.

3rdly. A certain number of calculous concretions may have their origin in the different ramifications of the bronchial tree. After death, this origin may be demonstrated by anatomical inspection. During life, it may be admitted, if, before or after the expectoration of the calculi, no symptom of pulmonary phthisis is remarked.

4thly. Finally, in all the cases of calculous expectoration, the prognosis should vary according to the constitution of the subject, previous circumstances, and the nature of the phenomena which manifest themselves during and after the expulsion of the calculi.

65. The sputa of phthisical patients, studied with respect to their odour, most frequently present nothing remarkable in the different periods of their disease; whether they come from the bronchi or from cavities, they exhale, in the greater number of cases, but a dull odour, not very disagreeable. This absence of odour in the sputa often continues till death; in other phthisical patients, the expectoration becomes very fetid during the last few days before death; in others, but certainly they constitute the smaller number, the expectoration is more or less fetid during the entire course of the disease.

Does the fetid odour presented by the expectoration in certain phthisical patients depend on the presence of air in the caverns? It cannot be admitted. Often, in fact, have we blown a great quantity of air through large bronchial tubes, and yet the sputa were never fetid: the matter contained in the caverns was also inodorous. At other times, the existence of a well-marked gurgling during life admitted not of a doubt that the air entered freely into vast caverns full of liquid, and still the matter of expectoration was inodorous. Thus, then, the fetor which it presents in a certain number of cases seems to depend principally on its own nature, and on the modification which the secretion undergoes, from which also result all the other varieties of the sputa. In many other secretions we see certain odorous principles thus produced without our being able to ascertain with what modification of the secreting organ their production is connected. Thus, for example, in two individuals apparently placed in the same conditions, the perspiration of the one is inodorous, whilst that of the other emits a strong very disagreeable odour.

In several persons whose sputa had a very fetid odour, we not only did not find in the lungs any particular lesion to account for it, but there was not even yet a cavern; some crude tubercles merely traversed the pulmonary parenchyma; in others, in fine, there were not even tubercles, and the only affection was chronic bronchitis.

But in a certain number of patients we have seen the fetid odour of the sputa coincide with the existence of a more or less extensive gangrene, which attacked even the parietes of one or more tuberculous excavations. This gangrene may be recognised—1st. By the odour which the affected parts exhale; 2ndly, by the greenish, or ash-grey colour of these same parts; 3rdly, by their softening in some cases, and their change into a grey or black detritus. It is a remarkable thing sometimes to observe this gangrene limited to the extent of some lines around tuberculous excavations; between the latter the pulmonary parenchyma no longer presents any trace of it. It is one of the causes which may hasten death in a certain number of phthisical patients; the moment of its supervention is announced by the fetid odour which the sputa assume, and subsequently by their change of colour, if the patient live long enough for the gangrenous part to break down, and constitute a part of the matter of expectoration. Thus the edges and lower parts of certain cancerous ulcers of the stomach, and particularly of the uterus, often become gangrenous. More frequently still than in man, we have ascertained in animals, and particularly in the horse and the hog, the existence in the lungs of a gangrene limited to the parietes of tuberculous excavations. It is probable, besides, that the gangrene, in this case, is but consecutive on an acute or chronic inflammation, of which the pulmonary parenchyma had been the seat around the caverns. The latter may then be compared to certain ill-conditioned ulcers around which the inflammatory process is so modified as to have a remarkable tendency to gangrene.

We have seen individuals who appeared to be affected only with a simple chronic bronchitis, and in whom the expectoration, habitually inodorous, assumed at intervals a real gangrenous fetor, without the other qualities of the sputa, and particularly their colour, undergoing at the same time any change. One can scarcely admit that in such cases this fetor, great and repulsive as it was, indicated a gangrenous state of the lung. How conceive, in fact, that without producing a group of very serious symptoms, could the gangrene thus attack the pulmonary parenchyma at different times? In the next place, in order that the sputa might cease to be fetid, if their fetidity was caused by gangrene, the gangrened parts of the lung should have been detached and expectorated in the form of a greyish detritus, which cannot well be mistaken, or overlooked. (Here the author details a case of fetid sputa considerable enough to induce one to believe in the existence of gangrene of the lung which disappeared spontaneously after a certain time.)

Whatever be the cause to which fetor of the sputa in the above case may be attributed, it will be retained as rather a curious practical fact that the gangrenous-like fetor of the sputa may disappear after having lasted for a longer or shorter time, and consequently that it is not a sign necessarily fatal.

66. The taste of the sputa of phthisical patients has been noticed as carefully as their odour. Most authors have stated that phthisical patients, whose sputa are insipid, are less inclined to fall rapidly into marasmus *. Our own observations have not confirmed the truth of this adage. We have seen some phthisical patients who complained of the insupportable taste of their sputa, and who wasted away but slowly. Others, on the contrary, whose sputa were almost insipid, sunk much more rapidly. We have seen but very few phthisical patients who told us that they found in their sputa the sweet and saccharine taste which Hippocrates considers as one of the signs of pulmonary consumption. According to most writers, these saccharine sputa are uniformly accompanied with rapid emaciation. But we think this opinion was principally advanced to support an old hypothesis, according to which it was admitted that the saccharine taste of the sputa was owing to the presence of the nutritive matter, which, passing through the diseased lungs, could not be elaborated there, transuded through the parietes of the bronchi, and became mixed with the sputa, of which it constituted a considerable part.

With respect to the salty sputa also noticed by Hippocrates †, and which Morton considered as a precursory sign of phthisis, we think that too much importance has been attached to them. We have seen several individuals affected with simple bronchitis, whose sputa had a saline taste, and who did not become phthisical. On the other hand, we have met as great a number of phthisical patients whose sputa never presented any well-marked saline taste.

67. The kind of intermission presented by the expectoration in a certain number of phthisical patients is an important circumstance to be known. In individuals, for example, whose lungs contain numerous caverns, we see for several successive days the matter of the expectoration constituted merely of a little greyish and

---

* *Ad phthisim proni, qui frequenter insipida sputant, tardius tabescunt.* (Bennet. Theatrum Tabidorum).

† *Phthisici salsuginosum spuunt, deinde dulcius.*

thready mucosity; then the sputa, suddenly changing character, became purulent and similar to the matter contained in caverns; after this expectoration has continued a longer or shorter time, it ceases anew, in order to be replaced by a simple expectoration of mucosity, and so on for several successive times. In several phthisical patients the expectoration is characteristic only during the night or the morning; the rest of the day they do not spit, or their expectoration has quite a different appearance. In others, the expectoration takes place only towards the end of the exacerbations of the hectic fever; their cough is dry during the entire paroxysm. It is the same, in this respect, with the tuberculous excavations of the lung as with several external ulcers, whose surface has been seen to become dry during the accession of an intermittent fever, and commence to become moist again according as the accession approached its termination.

68. After having sketched the principal features of the history of the expectoration in phthisical patients, it remains for us to inquire how far the consideration of the sputa, in these patients, may lead to certain data concerning the existence of pulmonary tubercles. Observation has convinced us, that there are scarcely any of the shades of the sputa of which we have spoken, which are not also observed in cases of simple chronic bronchitis. According to the infinite varieties of inflammation, which may affect the air-passages, the liquid secreted by the mucous membrane may present most of the shades with respect to form, consistence, colour, and odour, which is presented by the liquid formed in tuberculous excavations.

On the other hand, in more than one case of phthisis with softening of tubercles and formation of caverns, the expectoration is seen to remain constantly mucous, such, for instance, as is observed towards the middle or end of certain cases of acute bronchitis; and it is evident that in cases of this kind the consideration of the sputa can only lead into error with respect to the real nature of the disease *.

69. From the different observations now made, it appears to follow, that the mere examination of the sputa should not suffice to affirm any more than to deny the existence of pulmonary phthisis. Thus, when Cullen defined this disease, an expectoration of pus or of purulent matter which comes from the lungs and is accompanied with hectic fever, he gave a definition which to me appears incomplete and inaccurate, since it is based on a symptom which does not always exist, and which, when it exists, does not suffice to characterise the disease.

SECTION VI.

SIGNS AFFORDED BY HEMOPTYSIS.

70. Observation has a long time back demonstrated the very frequent connexion of hemoptysis with the present or future existence of pulmonary tubercles; wherefore it appears unnecessary for us here to adduce new facts in support of a truth so generally recognised.

It is on other points of the history of hemoptysis that we must principally dwell in this paragraph. We shall first endeavour to determine what are the different lesions of the lung, coinciding or not with tubercles, which may be considered as the cause of spitting of blood. We shall then seek to appreciate the different

---

* The author here mentions three cases, in the first of which the expectoration was purely catarrhal all through; in the second it was characteristic only at intervals, and in the third there existed a cavity without cough or expectoration.—Trans.

circumstances in which hemoptysis manifests itself in the different stages of pulmonary phthisis: finally, we shall mark the cases where profuse hemoptysis has existed without having been followed by the symptoms of phthisis.

71. Our observation inclines us to admit four principal sources for the blood which is expectorated. It may come, first, from the mucous membrane of the bronchi; secondly, from the parenchyma of the lung; thirdly, from a tuberculous excavation; fourthly, from an aneurism of the aorta. Here we shall speak only of the first three cases.

A. *Blood exhaled by the mucous membrane of the air-passages (bronchial hemorrhage).*

In a certain number of individuals who have died during profuse hemoptysis, we have not been able to assign any other source to the expectorated blood but the mucous membrane; there were also observed at the same time tubercles in different stages of development. On one occasion only we found none; the pulmonary parenchyma was perfectly healthy, and the exhalation of blood which took place on the surface of the bronchi seemed to be the sole cause of death. Thus we have seen individuals hurried to the grave by profuse intestinal hemorrhage, and more than once epistaxis has compromised the life of the patient. The mucous membrane, the source of the hemoptysis, presents no other lesion in this case but that which it exhibits in cases of simple bronchitis. Sometimes even it is then pale, or presents at most a rosy whitish tint. This again is what we see for hemorrhages of other mucous membranes. In several cases of intestinal hemorrhage, in particular, we have found the mucous membrane generally pale, with slight injection in some points. One may, no doubt, attribute this want of colour of the mucous membranes after hemorrhage to the circumstance of the blood having escaped from the vessels, instead of remaining in them. In whatever manner we may explain the fact, it is not the less important to retain it.

B. *Blood furnished by a sanguineous effusion which took place in the midst of the pulmonary parenchyma.* (Pulmonary apoplexy of Laennec, *pulmonary hemorrhage.*)

Ever since pulmonary apoplexy, which we prefer to call pulmonary hemorrhage, in opposition to bronchial hemorrhage, was noticed and so well described by Laennec, we have had frequent opportunities of observing it. Where does the sanguineons effusion exist? Some researches incline us to think that it probably takes place chiefly in the ultimate ramifications of the bronchial tree, in the pulmonary vesicles themselves, and consequently that pulmonary hemorrhage might be to bronchial hemorrhage what pneumonia is to simple bronchitis, different degrees of one and the same affection. (On this last point see preceding part of this work.) If, in fact, we submit the black and hard masses of pulmonary apoplexy to a little maceration, we perceive them become white, and according as the water carries away the blood accumulated in these masses, the latter, when cut in slices, present on their surface a great number of small lacunæ, which make them appear as if pierced with holes. Now whence can such an appearance arise, unless from bronchial branches which were considerably dilated by the coagulated blood which filled them? A repetition of these investigations we recommend to anatomists.

If these apoplectic round masses are solely the result of an effusion of blood, why do they most commonly present a deep black colour? That does not probably arise from this circumstance, that the blood which is effused is always venous blood, but rather from the stagnation of this blood, whether arterial or venous, in the midst of the tissues. Some old experiments of Hunter's, often repeated since his time, have proved that when the blood is arrested in a living animal between two ligatures, that contained in an artery soon presents the dark colour of venous blood. Thus, in the brain, as in the lung, the blood which has been effused for some time, presents a much blacker colour than that of venous blood itself.

Whence then arises the extreme hardness of these same masses? Their cause may be attributed to the absorption of the more liquid part of the effused blood, and to the rapid coagulation of that which remains. This is also observed in certain cases of cerebral apoplexy. If we were permitted to be present at the formation of pulmonary apoplexy, it is probable that there would be a period when the portion of lung which is the seat of it would not present to us the remarkable hardness which it presents at a subsequent period. This conjecture seems to find support in the following fact :—

A man, forty-five years of age, affected with aneurism of the thoracic aorta, died in the La Charité, in the month of October, 1824. Towards the centre of the left lung, a portion of the parenchyma, the size of a lemon, presented a redder colour than the remainder of the organ. Far from being hardened, this portion was, on the contrary, remarkably soft ; a great quantity of blood flowed from it, which seemed to be, as it were, effused into it ; one would have pronounced it to be a sort of apoplectic clot. Is not that a state which may precede the formation of the hard and black round masses described by Laennec?

The exaggeration, in some measure, of this same state is found in the following case related by Corvisart. (*Commentaires sur le Traité de la Percussion d'Avenbrugger.*) A man, thirty-seven years of age, went to bed in very good health at eleven o'clock at night ; when, at half-past three in the morning, they wished to awaken him, he was found dead. Some blood escaped through the nose and mouth. The entire of the right lung was found to be lacerated, and as it were macerated in an enormous quantity of black blood with which it was engorged. The substance of the lung seemed to be really confounded with the clots. The bronchi were full of black blood, as well as the trachea, larynx, fauces, and nasal fossæ. There was also a reflux of blood into the bronchi of the left lung. No other lesion existed.

Pulmonary hemorrhage does not necessarily induce hemoptysis. More than once we have found apoplectic-like engorgements in the lungs of individuals who had never spit blood. In others, the blood which was first effused into the lung makes its way into the cavity of the pleura. Here is a case of this kind.

CASE 8.—*Sanguineous effusion primarily formed in the parenchyma of the lung and opening into the pleura—Pulmonary tubercles.*

A man, of middle age, presented the different symptoms which characterise pulmonary phthisis already very far advanced : gurgling and dull sound without manifest pectoriloquy below the two clavicles ; frequent cough, with expectoration of puriform sputa (nummular patches separated from each other, floating on a gummy-like liquid) ; previous attacks of hemoptysis ; but little dyspnœa ; night sweats ; diarrhœa without pain ; marasmus.

One morning we found the patient breathing with much more difficulty than usual : he lay on the left side, and could not assume any other position without his breathing becoming much more embarrassed. He had felt no pain in the chest ; the sputa were slightly tinged with blood ; posteriorly on the left, and laterally, as far as a little above the level of the inferior angle of the scapula, the sound was very dull ; the respiratory murmur was absent, except when the patient exerted himself to take a deep inspiration ; then the bronchial respiration was heard. Over this same extent the voice presented a resonance which it had not elsewhere. The two following days the dyspnœa became still greater ; the sputa were coloured with a greater quantity of blood, and the patient died.

Post mortem. Numerous tubercles in the lungs; large excavations at their summit, with grey or black induration around them. The upper lobe of the left lung was closely adherent to the ribs; but between the thoracic parietes and the lower lobe of the same lung, a considerable quantity of reddish serum was interposed, with deposition of membranous flocculi on the free surface of the pleuræ costalis and pulmonalis.

So far no lesions were found but such as were foreseen; but further, after the liquid contained in the left pleura had been extracted from it, it was seen that at a point of its periphery the pulmonary parenchyma was really torn to an extent equal in breadth to that of a two-franc piece. On making an incision at this point, it was found that over a space which might have been occupied by a large-sized orange, the tissue of the lung no longer existed except in the form of debris, if I may say so, to which a black blood, still liquid in some points, and coagulated in others, was intimately united, as if it were combined. Nothing remarkable in the remainder of the respiratory apparatus. A great quantity of reddish liquid in different points of the intestines, which were in other parts ulcerated.

Here again, pulmonary apoplexy existed with softening and destruction of the parenchyma, into which the lung was effused: this destruction had gone so far, that the tissue of the lung was torn in a point of its periphery; thence, effusion into the pleura of a greater or less quantity of blood; thence, in fine, the pleuritis by which the death of the patient was accelerated. It is remarkable that in this case the commencement of this inflammation was not marked by any pain, though the inflammation had been acute, and produced by the introduction of a foreign body into the pleura.

We shall also notice, though the matter is foreign to the present subject, the coincidence in this case between the pulmonary hemorrhage and the intestinal sanguineous exhalation. To this fact we shall add two others, which also relate to pulmonary apoplexy: the first will present us an example of this apoplexy with hemoptysis; and the second, a case of this same affection without spitting of blood.

CASE 9.—*Pulmonary apoplexy with hemoptysis.*

A young girl, twenty-one years of age, felt for nearly the last year violent palpitations of the heart. Her breathing was habitually short; she was put out of breath by the least exertion; she coughed and expectorated for the last six months; the lower extremities were infiltrated; her strength went on diminishing. On the 10th of November, she, for the first time, spat up a considerable quantity of red blood. The hemoptysis ceased on the 11th. On the 12th, it reappeared in greater quantity: it was accompanied with orthopnœa and syncope, which lasted a considerable time. On the 13th, there was continuation of the hemoptysis; the patient then entered the La Charité, and presented the following state:—

All the skin was very pale, except the cheeks, which were red. Infiltration of the extremities; emaciation of the trunk; puffiness of the face; lips tumefied and violet-coloured: she constantly sits up, saying that she feels suffocated when she lies down. Breathing short, high, and frequent; coughing fits, followed by a profuse expectoration of sputa, which consisted of pure frothy blood. The chest, when percussed, yielded a sound which was in general obscure, which circumstance might be attributed to the slight infiltration of the integuments; a well-marked mucous râle, probably the result of the mixture of blood and air in the bronchi, was heard in different parts of the chest, especially anteriorly, between the clavicle and breast of the right side, and posteriorly between the scapula and vertebral column. The pulsations of the heart, irregular and frequent, were heard under both clavicles; pulse hard and frequent. (Leeches to the anus; sinapisms to the feet.) A great quantity of blood was expectorated during the day. In the night the oppression became extreme, and the patient died, expectorating with great efforts a great quantity of blood, which she seemed to vomit.

Post mortem. On the surface of the right lung, which adhered slightly to the ribs, there were found four brownish spots, being, on an average, the breadth of a three-franc piece. In the place where these spots were found, the tissue of the lung was very hard, black, and granular when cut into; a liquid similar to coagulated venous blood issued from them by strong pressure. A similar appearance extended from four to five inches into the interior of the viscus. Around this alteration the tissue of the lung was pale, crepitous, and engorged with serosity. A second similar alteration existed towards the summit of the same lung; there were also observed there two small black clots lodged in the middle of the parenchyma, which they compressed around them. Lastly, in the centre of the organ, two other small tumours of a similar nature, which were also circumscribed by a pale and crepitous tissue; they were both nearly the size of a filbert; that in the summit of the lung was as large as an apple. The left lung, which in general was healthy and crepitous, also contained in its summit two engorgements similar to the preceding, the size of a large nut, and so hard that the finger could scarcely enter them by strong pressure. A very healthy pulmonary tissue limited them exactly. Towards the base, along the anterior edge, there was found another engorgement as large as a nut: it was less hard than the others, of a less deep brown colour, and marked in its centre with a violet-coloured spot. The bronchi of the two lungs, of a light rose colour, were filled with a red frothy liquid. Near the engorged nuclei we found several bronchial ramifications distended with clots of black blood.

The great number and size of the apoplectic engorgements seated in the two lungs were here proportioned to the profuseness of the hemoptysis which had taken place. It was probably from the entire surface of the bronchial mucous membrane that the expectorated blood came; perhaps the black and hard portions of the pulmonary parenchyma indicated only those of the bronchial branches where the blood was more particularly accumulated. Let us call to mind, in fact, the black clots which, near the apoplectic-like nuclei, distended a certain number of bronchial ramifications; let us suppose all the branches of one lobule equally distended by these same clots, the result will be a uniform black colouring, in the midst of which we shall no longer be able to distinguish any of these branches. If they be too forcibly distended by the blood which fills them their parietes may give way, and the result will be the presence of a mass of liquid or coagulated blood in the midst of the pulmonary parenchyma, where it will be then really effused. This is what we have seen to happen, both in this case, and particularly in the preceding cases, where the blood having escaped from these vessels had softened and destroyed the lung, as it softens and destroys the portion of the brain where it is effused. We are aware, also, that what we here consider as an effect, may also sometimes precede and cause the sanguineous effusion.

We shall now cite a case in which there also was pulmonary apoplexy, but without spitting of blood.

Case 10.—A woman, seventy-two years old, was sunk in an adynamic state when she entered the La Charité, towards the beginning of the month of May. The cause of this state was found to be a gastritis, which was announced by a brown redness of the tongue, by its dryness, and by vomitings. The patient said that she had laboured under a catarrh of long standing. The breathing was embarrassed; the chest in general very sonorous; the respiratory murmur very weak, which seemed to disagree both with the hurried state of the breathing, and with the great sonorousness of the thoracic parietes. This woman continued to become weaker, and died on the 18th of May. The autopsy disclosed numerous lesions in the organs of digestion and circulation. The lungs presented the following state:—When removed from the thoracic cavity, they did not collapse; their vesicles presented manifest general dilatation. The summit of the left lung, which was a little puckered externally, was hard, black, and contained a cretaceous tubercle smaller than a nut. No other tubercle was found in the remainder of the lungs. The parietes of a great number of bronchi were perceptibly hypertrophied. Their inner surface presented beneath the mucous membrane two planes of fibres much more distinct than usual; those of one, longitudinal and parallel to each other, seemed to be of a fibrous nature; the others, more deep-seated, and visible without any laceration in the intervals between the preceding, were transverse, and presented a muscular appearance*. Beneath these two planes was a great number of cartilaginous grains, several of which had passed into the osseous state. Still more, in a point of the periphery of the right lung, there appeared a spot of a deep black colour, the breadth of a five-franc piece. Through the entire of this spot the pulmonary tissue was very hard: it presented, in a word, for the space of three or four inches below the spot, and for near an equal breadth, all the characters of apoplectic engorgement, such as was described in the preceding case.

Besides the existence of this pulmonary apoplexy without hemoptysis, the preceding case presents to our notice: 1st, the general dilatation of the pulmonary vesicles; 2ndly, the modifications which the parietes of the bronchi underwent in their nutrition, consecutively to the old catarrh of which the patient complained; 3rdly, the existence of a single tubercle, of a cretaceous nature, in a woman seventy-two years old; 4thly, chronic inflammation, with puckering of the portion of the parenchyma surrounding this tubercle, an inflammation not affecting any other point of the lung.

C.—*Blood coming from a tuberculous excavation.*

In a certain number of phthisical patients who died spitting blood, we have found one or more large cavities formed in the lungs filled with this liquid. Sometimes this blood was in the liquid state; sometimes it was found partly coagulated. We remember, among other cases of this kind, that of a young woman, who entered the La Charité in the month of March, and who presented all the symptoms of pulmonary phthisis in a very far advanced stage. Nothing, however, indicated as yet her approaching dissolution, when all at once she began to spit blood in such large quantities, and with such efforts, that she seemed to vomit it. She soon died asphyxiated. An immense cavern was found in each lung filled with large clots of blood; the bronchi and trachea were full of frothy blood. Such a case is rather rare; but what is infinitely more common, is to find the tuberculous or purulent matter contained in the cavities of a more or less red colour. This tint depends, in all appearance, on the presence of a greater or less quantity of blood; the sputa then present the reddish colour already mentioned.

We have been but once able to find the orifice of the ruptured vessel from which the blood had probably escaped in order to fill the cavity. This vessel was contained in a band which traversed the cavity, and was torn. Its orifice was closed by a small fibrinous clot of a white colour, which was easily extracted from the vessel. We were then able to satisfy ourselves that the cavity of the latter was still retained. But in all the other cases, it was always impossible to refer the existence of the hemorrhage to the rupture of any large vessel. Was this hemorrhage then the result of a sort of exhalation which took place on the surface of the parietes of the cavity? These facts do but confirm the facts already known regarding the prompt and complete obliteration of the large vessels which traverse tuberculous excavations. Most frequently these vessels are found almost in the same state in which the umbilical artery presents itself in the adult. The complete obliteration of the vessel seems to be preceded by a very considerable thickening of its parietes; sometimes then a very fine stylet may be introduced into its interior, and, if it be cut through, there is seen in the midst of a sort of fibrous cord a very small capillary orifice; the latter disappears in its turn, and the vessel is then changed into a perfectly full cylinder. We cannot do better than refer to the excellent observations published by Laennec on this interesting point of pathological anatomy, which had been already vaguely noticed by Baillie and Stark.

---

* The muscular fibres of the bronchi appeared to us very evident in the horse, where those more marked are circular, as those whose existence in man seems here to be proved by a pathological case.

72. The hemoptysis, the principal sources of which we have been now considering, is far from being always followed, preceded, or accompanied by the symptoms of pulmonary phthisis.

However, observation does not suffer us to deny that in the greater number of cases hemoptysis is connected with the existence of tubercles in the lungs. We have met with but a very small number of individuals, who, after having spit blood in considerable quantity, did not become phthisical. Here are some facts of this kind:—

A lady, now sixty-one years old, was attacked at the age of fifty-four with a very severe pulmonary catarrh, which was not, however, accompanied with fever, and which neither prevented her from going out or attending to her usual occupations. Before this cold she had never had a serious cough, nor any difficulty of breathing. In the midst of the cold, and, in spite of our remonstrances, she spent several hours, during Lent, in a cold damp church; in this church she was attacked by a profuse hemoptysis, which continued for the six following days; every day she spit up a glass of bright red blood as if in vomiting; during all this time the pulse continued frequent and full. A large quantity of blood was taken from her; she kept her bed, and observed strict silence and regimen. During twelve days a little blood still continued to tinge the sputa; the cough continued for about a month and then ceased, and since this time, that is eight years, she has never had a cold; her breathing has remained perfectly free; she is in possession of all her strength, and nothing has been discovered either by auscultation, or by the aggregate of the symptoms, which could cause us to suspect the least lesion in the respiratory apparatus.

M——, now seventy-nine years of age, had a profuse hemoptysis at the age of twenty-one, with which he was attacked during the course of a pulmonary catarrh, which lasted several months. He continued an invalid for a year; since that period he has never had any affection of the chest.

In this same case is another man who is now sixty-four years of age, and who, at the age of thirty-five, spit a great quantity of blood; at this time he was looked on as one destined to die of phthisis. However, he perfectly recovered, his constitution became very strong, and up to this moment there is no sign nor symptom of any lesion whatever of the lung. But what is remarkable, out of five of his sons two have died phthisical.

In the different cases now mentioned, the individuals spit blood, in greater or less quantity, not more than once. We know another individual who is at present eighty-four years of age, and who, for more than fifty years, does not pass many months without spitting blood; in the interval between his attacks of hemoptysis he does not cough, and has no pain or any affection of the chest.

73. In these different cases it is not probable that the hemoptysis was connected with the existence of pulmonary tubercles; we have not, however, entire certainty of that; all that they prove is, that profuse spitting of blood may present itself

without leaving any fatal trace after it for a length of years. Here now are other cases, in which, by post mortem examination, we were enabled to arrive at the certainty that there were no tubercles in the lungs of individuals who had spit blood a longer or shorter time before their death.

We opened in the Maison Royale de Santé the body of an old man, seventy-one years of age, who had died of diseased liver. At the age of eighteen this man had spit a great quantity of blood for several months; for the remainder of his life he remained subject to catarrhal affections. We found no other lesions in the lungs than a perceptible dilatation of a certain number of bronchial branches. The heart was of the ordinary size, and presented the normal proportions. The liver was filled with cancerous masses.

A woman died in the La Pitié of cancer of the uterus, at the age of forty-seven: for the last fifteen years before her death this woman scarcely passed three months without spitting a certain quantity of blood. These attacks of hemoptysis came on her whilst engaged in her usual occupation as a washerwoman, and she was so little inconvenienced by them that she did not discontinue her usual mode of life. In the intervals of these attacks of spitting blood she was not subject to cough. On opening the body we found no appreciable lesion of the lung or heart.

To these examples we might add that of a young surgeon, M. Maréchal. He died of phlebitis, which came on after venesection. About four years before the disease of which he died, he had had a tedious and severe pulmonary catarrh, during which he spit much blood. We then attended him: his hemoptysis continued for at least fifteen days; it was attended with febrile disturbance and perspiration after sleep. It ceased, but the cough still continued for a considerable time, then it also disappeared, and his health was perfectly re-established, and continued good till the invasion of the disease of which he died. We reckoned that some tubercles might be found in his lungs; none were discovered, and the most careful examination detected no appreciable lesion in these organs; but the heart was very large.

74. Hemoptysis which is connected with the existence of tubercles shows itself more frequently during the first stage of phthisis. In a considerable number of patients it is in this way the disease commences. It is not uncommon to see persons whose health is perfectly re-established after a first hemoptysis, so that it does not appear to be connected with anything serious. At the end of a longer or shorter time a second hemoptysis supervenes, then a third, and again they are restored to health, finally, they have a new attack of spitting blood, and this time their health does not return; they cough, have oppressed breathing, and all the symptoms of pulmonary phthisis develope themselves. The following case presents a striking example of the little danger which certain attacks of hemoptysis may bring with them, even after they have been several times repeated.

CASE 11.—*Hemoptysis frequently repeated in a young man, without his health having been affected by it, or without any sign of pulmonary phthisis.*

A young man, eighteen years of age, had had a first hemoptysis at the age of twelve. During the five following years he had enjoyed very good health, and had not been subject to catch cold. At the age of seventeen he again spit a considerable quantity of blood, and six months after he had a third hemoptysis; however, his health was not at all affected. At the age of eighteen he spit blood for the fourth time. It was then he entered the La Charité. This young man seemed to possess a very good constitution; he had considerable embonpoint, and his muscles were firm and well developed. He scarcely coughed at all, and felt no oppression. During the interval of the two last attacks of hemoptysis he had no catarrhal cold; he walked, ascended an eminence, and ran without feeling any dyspnœa. The chest when percussed sounded well in every part; the respiratory murmur, which was in general clear, was changed only by a little moist bronchial râle in some points. (Probably the result of the mixture of the air introduced into the bronchi with the blood which was exhaled there.) Neither had it that intensity, which almost always indicates the existence of an obstacle to the free passage of air or of blood through the lungs. The circulation and other functions were in the normal state. The description we have now given is that of an individual in good health. In fact, the only morbid phenomenon in this young man was the expectoration of a considerable quantity of pure, brownish blood, frothy on the surface. He himself said that if he did not see blood in his sputa, he would not consider himself ill. He was bled to a considerable extent from the arm, and a blister was applied over the chest. The hemoptysis ceased by little and little on the following days, and the patient was soon restored to perfect health.

Nothing proved that the lung in this individual contained tubercles. One could not, however, absolutely deny their existence, when we remember certain cases in which, without the health having been at first more changed than here after several attacks of hemoptysis, a period ultimately came when phthisis supervened.

Thus, sometimes a great number of years elapsed between the period when the first hemoptysis appears, and the commencement of the symptoms which characterise pulmonary phthisis; sometimes the first spitting of blood is immediately followed by the manifestation of the signs of pulmonary phthisis, which, in this case, in general assumes an acute form; sometimes ,in fine, it is during the progress of pulmonary phthisis that spitting of blood shows itself at longer or shorter intervals. We may add that there are some phthisical patients who run through the different stages of their disease, and die without having ever spit blood.

There are some circumstances which exercise remarkable influence on the return of hemoptysis. Thus we have seen patients who could not experience the most ordinary mental emotion without being attacked with spitting of blood. We have seen another phthisical patient, who, at three different times, was attacked with hemoptysis every time that leeches were applied to his chest; this man told us that as long as the leeches bit he felt within his chest an intense heat, and at the same time a most painful oppression. In fine, it is not uncommon to see hemoptysis re-appear in some phthisical females at their menstrual period, when the menses are irregular.

SECTION VII.

SIGNS FURNISHED BY THE SYMPATHETIC DISTURBANCES OF THE DIFFERENT FUNCTIONS.

75. Among these disturbances that of the circulation is most marked and most uniform, but it does not exist at all stages of the disease, and in all it is not similar to itself. Thus, most usually, tubercles commence without giving rise to any species of febrile disturbance; then, according as they become multiplied or softened, erratic febrile movements are observed to appear. At a later period, again, the fever returns every evening, whilst during the day there is none. Finally, at a still more advanced period, the fever no longer ceases, it is continued, but it is only redoubled at the end of each day. There are even some patients in whom two well-marked accessions are observed every day; the one towards noon, the other at night.

The accession at night very seldom commences by shivering; most frequently it is marked only by a greater acceleration of the pulse, and a greater heat of skin; at the same time the patients feel more oppressed, and their cough becomes in general more frequent and more painful. This accession lasts a portion of the night, and terminates towards morning by a sweat, the quantity of which varies according to the individual, and which is almost always confined to the head, neck, and chest. It is this sweat that characterises the hectic fever of pulmonary phthisis. Though it is a very frequent occurrence, it may however be wanting, and there are persons who die without ever having had it. Once established, it may be suspended for longer or shorter intervals, to reappear again. Its returns mark in general an exasperation of the disease. The attacks of hemoptysis often bring back this sweat, and it ceases with the spitting of blood, or a little time after it.

However characteristic the sweat of phthisical persons may be, it may, however, appear in other diseases, where its existence, combined with the general emaciation and other symptoms, may induce one to believe in pulmonary tuberculisation, though the latter may not exist. We shall never forget, with respect to this matter, the case of a young girl, who entered the La Pitié, affected with measles. During the six months preceding this, she had not ceased to cough, and, when the eruption disappeared, the cough continued. During the two following months we saw this young girl waste away rapidly; the pulse was habitually frequent; *profuse night sweats;* there was some diarrhœa, and the cough did not cease. She complained of no oppression; but said she felt rather an acute pain towards the interior and left side of the chest. In how many phthisical patients are not similar pains observed? Auscultation and percussion afforded but negative information; but we have above seen that this is the case also with many tuberculous patients. The girl, exhausted by continued fever, had arrived at the last stage of marasmus, when her lower extremities began to be infiltrated; the diarrhœa continued constantly, as well as the sweats. This person became more and more exhausted, and died at last without having presented any new symptom.

On opening the body we found the lungs exempt from all appreciable lesion; as also the heart. The spleen was changed into an immense abscess filled with a sanious and reddish pus. The veins of the lower extremities, the iliac veins, and vena cava, were completely obstructed by solid clots, which were externally red, and which consisted, towards their centre, of a whitish matter, which resembled, according to the points where it was examined, either pus of bad consistence, and granular, or softened encephaloid matter.

Thus, in this case, several of the symptoms accompanying pulmonary phthisis were produced by an abscess developed in the spleen, a very uncommon lesion, to which probably we might refer the pain which the patient felt towards the lower part of the left side. The œdema of the lower extremities depended, no doubt, on the obstruction which existed in the veins of these extremities. With respect to the lesion which might exist between the alteration of the veins and the disease of the spleen, we shall, without seeking to determine, merely call attention to the coincidence.

76. We have now passed in review the ordinary modifications which the circulation undergoes in phthisical patients; from what has been now said, it may be inferred that the fever does not supervene in these patients, or, at least, is not permanently established in them till a considerable time after the pulmonary tubercles have revealed their existence by different signs. However, there are cases in which the fever, far from closing the scene of the phenomena, on the contrary opens it, and together with the cough is the first symptom which appears. This is what happens in cases where persons who till then had appeared in good health, are simultaneously attacked with severe bronchitis and violent

fever. Once the latter has commenced, it never ceases ; the cough also continues, emaciation supervenes, the patients waste away, the signs of pulmonary tuberculisation become more and more evident, and this affection, to which little importance was at first attached, and which had been called *catarrhal fever*, turns out to be phthisis. In such a case the fever may retain all its intensity ; death then rapidly supervenes. At other times the febrile disturbance disappears, or, at least, diminishes, and then the disease, acute at its onset, repasses into the chronic state, and phthisis, once declared, proceeds with its accustomed slowness.

Besides these cases, in which the fever exists from the first period of the phthisis, and marks its commencement, others of a quite opposite nature are met, where the fever, on the contrary, does not manifest itself, even when caverns are already formed within the lung. That seems to us to take place principally when the tuberculous excavation is surrounded by an almost healthy parenchyma, and when outside the point where this cavity exists, there are either no tubercles, or nearly none ; to explain these differences, we must have recourse to the individual dispositions of each patient. More than once have we been consulted by persons who complained of nothing but a cough, which they could not get rid of, and a slight oppression, which they mentioned only when questioned on this point. Besides, they had strength enough to continue the ordinary mode of living ; they made long journeys on foot ; they were not very much emaciated, their pulse was natural ; nothing, in a word, indicated in them a lesion of the lungs already far advanced ; at the very most they appeared disposed to become phthisical. However, on auscultating them, we were not a little surprised to find towards the summit of either lung all the signs, which leave no doubt of the existence of a cavity ; in the remainder of the pulmonary parenchyma, this respiratory murmur was pure. Of the last stage of phthisis, then, these persons had no sign but the anatomical lesions which characterise it ; they had not any of the general symptoms ; the fever in particular was completely absent in them. Before auscultation was employed, could such facts have been suspected ?

76. In treating of the functional disturbances presented in phthisical patients by the circulatory apparatus, let us say a word of the liquid contained in this apparatus, namely, the blood. In these patients, when they have attained a far advanced stage of the disease, it presents a very remarkable modification ; that is a buffy state, as well marked as in acute pleuro-pneumonia, or in articular rheumatism. In all, the blood drawn from the vein has identical characters ; it presents a small clot, surrounded by a great quantity of serum, and covered with a white, thick clot, with raised edges. It is precisely the same appearance as that which is presented by blood in almost all cases of acute articular rheumatism. What then is the common tie which, with regard to the qualities of the blood, connects two affections in all respects so very unlike ?

CHAPTER III.

OF THOSE DISEASES WHICH COMPLICATE PULMONARY TUBERCLES.

77. It is very seldom that on opening the dead bodies of phthisical patients no other lesion is found except tubercles developed in the lung. Traces of acute or chronic affections are most usually met either in the respiratory apparatus itself, or in other organs. Sometimes these different affections appear to be developed only when the pulmonary parenchyma already contained tubercles ; sometimes they appear to have preceded the formation of these ; sometimes too,

they concur in their production. In all cases their study is no less important than that of tubercles themselves; on the existence of these intercurrent diseases important modifications depend, either in the group of symptoms by which phthisis is announced, or in its progress, or in its treatment. It is by them more than by pulmonary tubercles that several patients are prematurely hurried to the grave. Manifesting themselves sometimes by symptoms more marked than tubercles of the lung, these diseases fix the attention more or less exclusively, and the accidental production which has attacked the pulmonary parenchyma may then be readily overlooked. In the number of these complications, we shall not forget that which has most generally gained attention, since the splendid works of Bayle and Laennec, namely, the simultaneous existence of tubercles in different organs. Very recently M. Louis has published the results of his laborious researches on the degree of frequency in which tubercles are observed in different organs; but as this matter has already been sufficiently explained, we shall not dwell on it here, unless, however, when we may find it necessary, in order to discuss what must be understood, according to us, by the term *tuberculous diathesis*, which has been so variously interpreted.

ARTICLE I.

DISEASES WHICH COMPLICATE PULMONARY TUBERCLES, AND WHICH ARE SEATED IN THE RESPIRATORY APPARATUS.

78. The diseases to be considered in this article may be looked on as almost constant, or at least as very frequent, in those cases in which tubercles exist in the lung. The symptoms to which they give rise have not always been sufficiently distinguished from those which depend solely on tubercles exempt from all complication; these symptoms are often much more marked than those appertaining to tubercles. They are so much the more important to be known, as the organic lesions whose existence they disclose may be combated, arrested in their development, and even destroyed by the resources of art. This is a truth, which several practitioners do not seem to feel, who, convinced, with more or less reason, that tubercles themselves cannot be cured, are not sufficiently careful to oppose an active treatment to the different diseases which may complicate those tubercles. However, by combating these complications, we remove symptoms oftentimes more serious, and, above all, more distressing to the patient, than those depending on the tuberculous affection itself: and moreover, this is certainly one of the best means by which we can endeavour to render tubercles stationary, or at least to retard their development and progress, or finally, to favour their re-absorption, if it be possible. For if it cannot be doubted that the presence of tubercles in the lungs is the cause of several other diseases of the respiratory apparatus, such as bronchitis, pneumonia, pleuritis, observation also teaches us, that these diseases, in their turn, give a destructive activity to the process of *tuberculisation;* that at other times it is they which produce it at first, then disappear, or at least become more or less latent, in order to be reproduced at a subsequent period, when, under the influence of these same diseases, which may be considered as a first agent of impulsion, the tubercles shall be more and more multiplied, and shall by their presence irritate the surrounding parts. Thus, in this sort of connexion of phenomena, the same lesion is alternately cause and effect. The same is observed in a number of other cases. See, for instance, the numerous changes which the conjunctiva may undergo after an ophthalmia. After all vascular injection has disappeared, the continuance of one or more pustules, of pterygium,

of excrescences of different forms, alone attests the previous existence of inflammation; but from time to time, we see the latter renewed around the pustule or excrescence, which in this case is to the conjunctiva what the tubercle is to the lung. If the pathological process, which here takes place before our eyes, had occurred internally, the precise period of its commencement might have easily escaped us, and in the inflammation we could see nothing but a phenomenon consecutive to the development of the morbid production of the conjunctiva. The same may be said of several spots which show themselves on the transparent cornea, consecutively to an attack of ophthalmia. It is, besides, a remarkable circumstance that, in a great number of cases similar to the preceding, in which inflammation is at once both cause and effect, the process of irritation which precedes the alteration of nutrition is oftentimes much less marked and much less severe than that which follows it. This is very evident, for example, with respect to inflammation of the pulmonary parenchyma, considered as cause or as effect of the development of tubercles. It is again more manifest for encephalic tubercles, whose production, in a great number of cases, is preceded by symptoms of inflammation or irritation so very obscure, that, in these cases, we can no longer admit the latter as a producing cause of cerebral tubercles, except by analogy with that which occurs in other organs.

SECTION I.

DISEASES OF THE LARYNX, TRACHEA AND BRONCHI.

79. The different tissues whose aggregate constitutes the parietes of the air-passages, from the larynx to the last extremities of the bronchi, present alterations, variable in their nature and their intensity, in almost all the individuals affected with pulmonary tubercles.

18. The slightest degree of these changes is a simple redness of the mucous membrane of the larynx, trachea, or bronchi. With respect to its extent, we perceive this redness to be sometimes nearly general, and even to occupy bronchial tubes distributed to lobes exempt from tubercles; sometimes the bronchi are but partially red, and then this redness exists principally in the vicinity of the largest and most numerous tubercles; it is in general brightest where the tubercles are already softened and succeeded by caverns. It is not uncommon to find considerable redness only in the small bronchi; the colouring diminishes in the larger, and finally, the trachea is found to be white, as also the larynx. The contrary arrangement is less common.

81. In a very small number of patients only, the inner surface of the air-passages, carefully examined, as far as the points where the instrument was no longer able to trace them, presented the most perfect whiteness; in these patients there was as yet no tuberculous excavation. Shall we conclude from this absence of bronchitis that, in cases of this kind, the tubercles were developed in the lung independently of any irritation of the bronchi? Such a conclusion would be any thing but correct; for here, as in several other tissues, the inflammation may have disappeared; thus severe urethritis disappears spontaneously, and in a manner before our eyes, when the testicles come to be engorged. Thus we have seen, in the Hôpital des Enfans, young patients in whom the lymphatic ganglions of the neck remained tumefied, and had become tuberculous a long time after the disappearance of a chronic inflammation of the hairy scalp and of the skin of the face. An individual, affected with phymosis, was subject to frequent inflammation

of the inner surface of the prepuce and gland. During the course of one of these inflammations, which was more severe than usual, the superficial and deep seated lymphatic ganglions of the two groins became large and painful ; the patient, having entered the La Charité, was operated on by M. Roux ; from that time he was no longer subject to the bastard gonorrhœas, which he so often experienced up to the moment of the operation ; the *engorgement of the inguinal lymphatic ganglions diminished, but did not disappear.* Some months later, this individual entered the La Charité, into the wards of M. Lerminier, for a pulmonary catarrh ; from him it is we have the preceding details. Then the gland and prepuce were perfectly sound ; but in each groin several lymphatic ganglions retained considerable size. What appeared at first to be but simple bronchitis was soon considered by M. Lerminier as tubercular phthisis ; the latter became more and more manifest, and soon terminated in death. The post mortem examination demonstrated the existence of numerous tubercles, either crude or softened, in each lung. In each groin there appeared beneath the skin and between the muscular layers large lymphatic ganglions, of a livid red externally ; when cut into, several presented, in the midst of this red colour, granulations of a yellowish white colour, which seemed to us to be rudiments of tuberculous matter ; in the pelvis, along each upper strait, and anterior to the lumbar vertebræ, there was a chain of these same ganglions, which, whilst they were larger than ordinary, presented three different appearances : some were uniformly red ; others of a red colour mixed with white points ; the third presented through their entire extent a yellowish, friable mass, in the midst of which the red colour presented itself only in isolated points.

These facts seem to us important, inasmuch as they show, beyond all doubt, how the disturbances evidently produced by an inflammation, more or less remote from the place where it is developed, may continue and even increase after the primary inflammation has completely disappeared. And may not what we have just now seen to occur before our eyes in the preceding cases also take place in the internal organs, in the glands of the mesentery, for instance, consecutively to an enteritis, in one of the anatomical elements of the lung, consecutively to a bronchitis ? M. Broussais has already satisfactorily proved this ; but what we cannot grant him is, that the case is always so. We conceive and admit that, in a very great number of cases, inflammation of the liver succeeds duodenitis ; that inflammation, and then *tuberculisation* of the mesenteric ganglions, succeed enteritis : but physiology, which teaches us that every organ carries causes of disease in itself, also inclines us to admit that these different organs may be affected or diseased primarily. The previous existence of bronchitis then does not seem to us absolutely necessary in all cases to the development of pulmonary tubercles ; for the production of these, it is quite sufficient to conceive a point of irritation, a modification of nutrition in the place where they take their rise. Why do we here again repeat this discussion which has been already given ? It is in order that the sound state in which the bronchi are sometimes found, may not serve as an argument to prove that pulmonary tubercles may be developed without previous bronchitis *. This absence of redness, or of any other lesion, does not seem to us to decide any thing either for or against.

The absence of redness of the bronchi in certain phthisical patients where tubercles are still crude, or even more or less softened, should coincide with the absence of cough and of expectoration ; some cases already cited showed this.

---

* More frequently even than in the human subject, I have found in the horse the bronchi perfectly white throughout their entire extent, though tubercles existed in the lung. But these tubercles were small and but few in number ; the parenchyma between them was sound. In the horse as well as in the human subject, the bronchi appeared to me red, in different degrees every time that the tubercles were softened, were replaced by caverns, and the pulmonary parenchyma around them was hepatised.

The intensity of the one and profuseness of the other should be in the direct ratio of the inflammation of the bronchi: we must except the cases where the expectorated matter is formed by tuberculous cavities.

82. In a preceding portion of this work, we have already marked several of the changes which the larynx, trachea, and bronchi undergo, consecutively to their chronic inflammation. We must here principally confine our attention to such alterations as coincide particularly with the existence of pulmonary tubercles. We shall describe them successively in the larynx, trachea, and bronchi.

83. In three-fourths at least of the phthisical patients treated in the wards of M. Lerminier, the larynx was found affected in different degrees. Among the different tissues which enter into its composition, the mucous membrane is that which has presented to us the most frequent lesions. In the majority of cases the tissues subjacent to it are only changed consecutively.

We have already spoken of the mere redness, without any other lesion, of which the mucous membrane of the larynx, as well as that of the rest of the air-passages, may be the seat. Sometimes this redness attacks the entire of the larynx, sometimes it is partial. Frequently enough, for instance, we have seen it occupy only the laryngeal surface of the epiglottis; at other times it attacked only the bottom of the ventricles: so that at first sight the larynx seemed to be perfectly healthy. In phthisical patients, whose voice was for a long time changed, we have found in the larynx no other lesion but this redness confined to the bottom of the ventricles; a remark interesting enough in a physiological point of view, since it proves how necessary to the integrity of the voice is the perfect integrity of all the parts of the larynx. The cause of the alteration of the voice, in the case of mere redness of the bottom of the ventricles, principally depended in all probability on the mucosity, which, secreted more copiously than usual, filled and obstructed the ventricles.

Many phthisical patients have presented to us a perceptible softening of the mucous membrane of the larynx. Sometimes this softening was carried so far that the thyro-arytenoid ligaments, which constitute the chordæ vocales, are no longer covered except with a sort of liquid pulp, which has taken the place of the mucous membrane; in some cases, in fine, we no longer find even a vestige of the latter, and the thyro-arytenoid ligaments are entirely exposed. Thus, in certain softenings of the gastric mucous membrane, this membrane, at first liquified, is then completely destroyed, so that the substances taken into the stomach are in immediate contact with the sub-mucous cellular tissue.

The laryngeal mucous membrane may also present perceptible increase in thickness, whether it becomes hardened, or softened, or retains its ordinary consistence. The portion of membrane covering the two surfaces of the epiglottis sometimes exhibited remarkable thickening, with induration of its tissue. The epiglottis in this state had lost its elasticity and natural mobility, it had acquired three times or four times its natural thickness, and the site of this increase of thickness was exclusively the mucous membrane. But what was principally remarkable was the deformation which the epiglottis had undergone: its free edge, instead of being sloped, was blunt and rounded, which depended on considerable puffiness of the mucous membrane lining this edge. This thickening of the mucous membrane of the epiglottis coincided with a brownish colouring and with other changes in the larynx.

On one occasion we saw the portion of mucous membrane lining the bottom of the ventricles so increased in thickness, that it went beyond the level of the chordæ vocales, between which it projected, and the cavity of the ventricles no longer existed.

The laryngeal mucous membrane may become thickened, partially puffed, and produce on its surface vegetation, fungous growths, and tumours of various size and form. Thus, in a phthisical patient, who, besides an almost total extinction of voice, had complained during his stay in the hospital of an habitual sensation of uneasiness and constriction towards the region of the larynx, we found the space interposed between the chordæ vocales diminished by one-third in the transverse direction by a reddish, soft, pediculated tumour, which arose from the bottom of one of the ventricles and projected a little beyond the level of the chordæ vocales. With respect to its form and texture, it presented great resemblance to certain tumours called polypous, which, arising by a thin pedicle from one of the surfaces of the neck of the uterus, pass forwards, like prolongations or appendices of the mucous membrane, between the lips of this same neck. In another individual, equally affected with pulmonary tubercles, the portion of mucous membrane extending from the upper opening of the larynx to the upper chorda vocalis, was surmounted by a rounded tumour of the size of a large pea; it was hard, and formed by the union of a great number of small whitish granulations, which gave it the appearance of certain syphilitic vegetations of the rectum, called cauliflower by medical men.

The secretion of the mucous membrane of the larynx, when in the state of chronic inflammation, presents an alteration which we think should be noticed here: it is the production of false membranes which, by their form, by their consistence, and by their site, perfectly resemble some of the numerous varieties of the false membranes of croup. In several phthisical persons whose voice is completely extinct, or at least very much altered in the last period of life, we have found the larynx, and particularly its ventricles, lined by a membranous layer of greater or less density. Under the same circumstances we have seen the two surfaces of the epiglottis covered, and as it were, incrusted with a similar layer. Thus, then, membranous laryngitis, or croup in the chronic state, seems to us to be an affection which is far from uncommon in phthisical patients. It may give rise to phenomena which vary according to the site and thickness of the false membranes. In the majority of cases, however, it did not seem to us to produce particular consequences or peculiar symptoms. The breadth of the larynx in the adult is no doubt a reason which renders the formation of false membranes on the vocal organ much less alarming than in the child.

The follicles which exist in great numbers in the mucous membrane of the larynx, may be affected either simultaneously with the rest of the membrane to which they belong, or separately. One of the affections of these follicles, which is in some measure intermediate between the healthy and morbid state, is their unusual development. They then appear in the form of small greyish granulations scattered over the laryngeal mucous membrane. The existence of these granulations coincides often with other alterations in the larynx, the result of its chronic inflammation; so that here, as in the intestine, hypertrophy of the follicles is connected with an inflammatory process.

Oftentimes the entire inner surface of the larynx is covered with small spots of a duller white than the rest of the mucous membrane, projecting considerably above the latter, surrounded by a red circle as by a sort of vascular crown, and sometimes presenting in the centre another red point. These spots have been taken for erosions or superficial ulcerations of the mucous membrane. We think that such is not their nature; the regular form which they assume, the projection which they present, the injection both of their circumference and of their centre, like the two vascular circles of the iris, incline us to consider these spots as inflamed mucous follicles. That becomes quite evident, when these same spots are examined in the intestinal canal of the human subject, and particularly of that of the horse, where their greater development allows us to discover their nature.

The follicles of the larynx, like those of the intestine, being more voluminous and reddened by inflammation, represent pustules or boutons, which tend to terminate in ulceration. At other times, these same pustules or boutons, which are but enlarged follicles, lose their red colour, and acquire a dull white or yellowish tint, which indicates the existence of a purulent secretion within them. If they continue to increase in size, the result may be small abscesses, of nearly equal size, scattered over the inner surface of the larynx, as we had an opportunity of observing once in a girl thirteen years of age (in the Hôpital des Enfans, under the care of M. Gadelot, in 1821). At other times, the pus secreted by the follicle is concrete and grumous ; there then result small hard and round tumours, situate, as the follicle, beneath the mucous membrane, and designated in the larynx, as in the intestine, by the name of *tubercles.* At the end of a certain time, the concrete, semi-solid pus, which more or less resembles the clots (grumeaux) secreted by the false membranes which line the inner surface of certain abscesses ; this pus, I say, this tuberculous matter as it is called, tends to escape, by virtue of a general law, from the cavity where it is formed, and, in order to that, there is set up in the mucous membrane an inflammatory process which terminates in ulceration, which at first was probably but an enlargement of the orifice of the follicle. No doubt it would be going beyond facts to affirm, that all the tubercles of mucous membranes are but diseased follicles ; but we conceive that this may be admitted in a great number of cases, for which we rest principally on the following reasons :—

1st. In the mucous membranes, the form, disposition, seat, mode of development, the termination of tubercles in ulceration, resemble the form, seat, etc., of follicles, whether in the healthy or inflamed state.

2ndly. On the skin we have had an opportunity of seeing follicles become changed, develope themselves, become filled with pus, and then become almost similar to the tubercles of mucous membranes, more especially when the pus which filled them had a certain degree of consistence.

3rdly. In the horse, where the mucous cryptæ are much more developed than in man, we have been able strictly to trace the numerous changes which these cryptæ or follicles are capable of undergoing. We have seen them become filled with fatty, sebaceous, gelatinous matter, so as to resemble atheromatous, meliceritic tumours, real cutaneous pimples. We have seen their parietes indurated and thickened, and become fibrous and cartilaginous. Surely if the most accurate observation leaves no doubt regarding the reality of these extraordinary transformations of the follicle, does not analogy also lead us to admit the possibility of its transformation into what is called tuberculous matter ?

Whatever may be thought of this œtiology, one thing is quite certain, that in phthisical patients the mucous membrane of the larynx is often found raised in different points of its extent by small rounded points, of a dull white or yellowish colour, called tubercles. The mucous membrane above them often presents no appreciable alteration ; at other times it is inflamed in different degrees, and always, at the end of a longer or shorter time, it has a tendency to ulcerate, in order to give exit to the tuberculous matter collected beneath it. There is nothing to prove that such is the origin of the greater number of ulcerations of the larynx ; it is less common than it is generally said to be, to meet tubercles in the larynx in phthisical subjects ; they are certainly much more uncommon than intestinal tubercles.

Whatever be the origin of the ulcerations of the larynx, observation satisfies us that they are common enough in phthisical patients. The following will present the substance of our researches on this head :—

Nothing is more variable than the extent of the ulcerations of the larynx. They often occupy so small a space, that they very easily escape being perceived. At other times all the inner surface of the larynx presents one entire ulceration. In the midst of this extensive solution of continuity, we here and there perceive merely the debris of the mucous membrane, which appear like red irregular vegetations in the midst of a surface whose colour and appearance vary according to the tissues which constitute it.

These ulcerations considered in reference to their form may be regularly or irregularly rounded, oval, oblong, sinuous, or linear. Their edges may be either on the same level as their lower part, or more or less elevated above it.

Their number is in general in the inverse ratio of their size. There are some cases in which all the inner surface of the larynx is, as it were, perforated (criblée) by a very great number of small ulcerations separated by portions of membrane, which present no other alteration than a variable redness. The latter is sometimes marked only on the very edge of the ulceration, and then the mucous membrane seems covered over with a great number of small red circles. In some cases, however, there is found only one, and that a very small ulceration.

In another part of this work, we have called attention to the ulcerations of the intestinal mucous membrane, with perfect whiteness of their lower part, their edges, and of the membrane which surrounds them. This same whiteness is observed in certain cases of ulcerations of the larynx. Such a fact is very important, inasmuch as it proves that a mucous membrane may be seriously altered though it may present a natural colour. There is no point of the larynx where ulcerations are not found. They are very common in the chordæ vocales, which they often destroy to a great extent. The inner surface of the cricoid cartilage is frequently the seat of some, which are remarkable in this respect, that they are always numerous, small, and all nearly similar. It is not uncommon to find the portion of mucous membrane lining the re-entrant angle of the thyroid cartilage, at the anterior commissure of the two thyro-arytenoid ligaments, the seat of a small ulceration. Finally, ulcerations are found not unfrequently on the mucous membrane lining the bottom of the ventricles ; their existence should be noticed, as they may easily escape investigation, and yet they may be the only lesion found in the larynx of persons whose voice was for a long time changed.

Among the ulcerations of the larynx, some extend only in breadth, and consist merely of a simple solution of continuity of the mucous membrane ; their bottom is then formed, either by the different tissues immediately situate beneath the mucous membrane, such as ligaments, muscles, cartilages, etc., or by a layer of cellular tissue of more or less thickness, which being very thin and scarcely perceptible in the normal state, is hypertrophied, or indurated, or becomes the seat of a morbid nutrition ; thence fungous growths and vegetations which are raised from the bottom of certain ulcerations of the larynx, thence also the tubercles which traverse them.

Other ulcerations differ perceptibly from the preceding in this, that they extend principally in depth. Then the different anatomical elements which enter into the composition of the larynx may be altered and destroyed in a longer or shorter time. The fibrous tissue which constitutes the thyro-arytenoid ligaments is one of the parts most frequently attacked by ulceration. The white and shining fibres which constitute these ligaments acquire a duller colour, approaching that assumed by fibrous tissue when subjected to long continued maceration ; at the same time they become softened in separate fasciculi ; one would say that the inflammation which has attacked them brings them back to cellular texture ; being gradually reabsorbed they disappear ; the thyro-arytenoid ligament then exists merely in the form of debris, it may even happen that no trace of them whatever is to be found, and the bottom of the ulceration is then formed of the muscle of the same name. Every time the chordæ vocales have undergone the alterations now mentioned, the voice itself is very much altered. We have thought that the lesion of one chorda vocalis alone, though very extensive, occasioned a less complete loss of voice than a lesion of the two chordæ vocales, much less serious, but simultaneous. These facts accord with those disclosed by experimental physiology regarding the use of the ligaments of the glottis in the production of the voice.

The thyro-arytenoid muscle itself, which we have seen to form the bottom of several ulcerations, consecutively to the complete or incomplete destruction of the chordæ vocales, may in its turn undergo different alterations. Sometimes we have found its fibres, as it were, dissected and separated in fasciculi by a gelatinous, puriform serous liquid; at other times, a sort of concrete pus, or matter called tuberculous, was deposited in its substance in the form of granulations, of small masses or whitish clots. In two cases this muscle appeared to us really atrophied: the place which it usually occupies was in a great measure taken possession of by reddish masses of cellular tissue, between which were scarcely distinguished some pale and colourless fibres of the muscle. In a greater number of cases this same muscle has been found considerably softened: its fibres were reduced to a sort of pulp; in other parts they no longer existed, as if the muscle had been subjected to an external violence which had lacerated it; finally, in some phthisical subjects we no longer found any trace of it: on one occasion, the lateral crico-arytenoid muscle was destroyed at the same time, and the bottom of the ulcer consisted of the cricoid cartilage partly ossified. Experiments on living animals have taught that the action of the thyro-arytenoid muscle is necessary to the production of the voice; this is also confirmed by pathological facts; for every time we have found this muscle more or less changed, the voice was also modified.

When one of the cartilages of the larynx constitutes the bottom of the ulcerations, this cartilage is often seen to be changed; its surface, divested of its perichondrium, becomes rugged and uneven; its tissue, which is homogeneous and pervaded in its healthy state only by white liquids, is penetrated by the red part of the blood, which is observed there in the form of reddish streaks or points; and in the midst of this change of texture produced by inflammation, we often observe rudiments of osseous matter which replace the cartilaginous tissue. Thus this change, a natural and ordinary consequence of the progress of age, is here accelerated, and as it were prematurely developed under the sole influence of the inflammatory process, which extends from the soft parts to the cartilages of the larynx. A remarkable phenomenon, which leads us to regard as identical, with respect to their results, the normal process of nutrition and the process of inflammation.

The articulations which unite the different cartilages are themselves sometimes considerably affected. In one phthisical subject, in addition to ulceration of the larynx, the ligaments were found entirely destroyed, which in the normal state keep the arytenoid and cricoid cartilages in contact. The crico-arytenoid articulation, which was really luxated, was bathed in a great quantity of purulent liquid. The anterior part of the arytenoid cartilage of this same side was itself corroded, become rugged, and partly ossified. These alterations coincided with considerable ulceration of the left chorda vocalis, which extended as far as the arytenoid cartilage. In this person, who was forty-eight years old, the voice was merely become hoarse, but not extinct; deglutition, and attempts to cough, excited pain towards the region of the larynx.

An ulceration very inconsiderable in breadth, but which is deep, may by reason of its situation cause very serious disturbance. Such is the following case: —A man, presenting all the symptoms of far advanced pulmonary phthisis, entered the hospital in the summer of 1817. Towards the upper extremity of the obtuse angle which the thyroid cartilage presents over the median line of the neck, there existed a very small solution of continuity, with rounded edges, scarcely capable of admitting a large pin's head, and through which a little air escaped with a hissing noise every time the patient inspired or expired with force. The voice was merely weak, without any other modification. On opening the body, no other alteration was found in the larynx except a round ulcer, which might admit an ordinary sized pea, and which was situated in the re-entrant angle formed by the union of the two laminæ of the thyroid cartilage, a little above the anterior commissure of the upper chordæ vocales. In the space occupied by this ulcer the mucous membrane was destroyed; the bottom of it was formed by the thyroid cartilage, which at the centre presented the slight loss of substance, whence resulted the fistulous opening discovered during life. What is remarkable in it is this, that, though existing for nearly a year, this fistula neither increased nor diminished in extent. Its situation also accounts for the preservation of the voice. This is the only time we had an opportunity of observing a fistula of the larynx in the phthisical patients treated at La Charité for several years back, that is to say, in nearly two thousand persons. This proves, at least, that these fistulæ are very rare.

Other fistulous passages, not affecting the cartilages, may form in the very substance of the soft parts of the larynx. In one phthisical patient, twenty-five years of age, the posterior portion of the right ventricle of the larynx presented a fistulous opening, which, proceeding posteriorly and outwards, terminated in a cul-de-sac anterior to the arytenoid cartilage of this side. The opening of this fistulous passage was gaping, and was about a line in diameter; its edges were smooth, round, without any trace of inflammation, as if they had been those of a natural opening; towards the bottom of it, purulent matter, which was yellowish and inodorous, was collected. Several other facts of a similar nature was observed at the La Charité. In all the fistulous passage occupied the same point. It was observed to terminate near one of the sides of the arytenoid cartilage, or else to enter the articulation of this cartilage. It might be conceived, by analogy with what passes elsewhere, that this articulation is in certain cases the part primarily diseased, and that it is the commencement of the fistula. Be that as it may, in the case now cited, and in others similar, there was complete aphonia.

The cellular tissue subjacent to the fold of mucous membrane which constitutes the aryteno-epiglottic ligament, presented to us serous infiltration so great, that the raised mucous membrane formed on each side of the upper opening of the larynx a considerable swelling which partly obliterated this opening. Twice we have seen this infiltration commenced during life by the symptoms of œdema of the glottis, such as they have been described by Bayle. In other individuals we saw nothing of the kind. But what we think should be noticed here is, that, every time we found this œdema, there was at the same time well-marked chronic laryngitis, so that the serous infiltration was, in the cases seen by us, merely an additional phenomenon. Thus, in most of the cases where we have found sub-mucous œdema of the intestinal canal, the mucous membrane presented traces of chronic inflammation in its colour, consistence, thickness, and in the nature of the liquids which lined it. We do not mean to say that the sub-mucous œdema of the intestines or larynx may not, as well as the sub-cutaneous œdema, exist without inflammation; but from the preceding facts we may conclude that several of these cases of œdema should be referred to, or at least are connected with, an inflammatory state of the mucous membrane. Thus a limb becomes infiltrated around old cutaneous ulcers.

84. After having traced the principal changes observed in the larynx of phthisical patients, we shall now endeavour to collect the aggregate of the symptoms which have marked these alterations during life.

The modifications of the voice must first engage our attention.

Here redness, with slight swelling of the mucous membrane lining the chordæ vocales or the ventricles, is sufficient to produce a perceptible change in the timbre of the voice.

Ulceration of these same parts of the mucous membrane produces a change in the voice, which oftentimes does not exceed that occasioned by mere swelling of the membrane.

In these two circumstances, the change of the voice seems to depend—1st. On an unusual accumulation of mucus or of pus in the ventricles; 2ndly, on the modification which the thyro-arytenoid ligaments necessarily undergo in their texture, and consequently in their elasticity, when they are no longer covered by mucous membrane.

The ulcerations which exist in other parts of the mucous membrane, and especially between the anterior or posterior extremities of the chordæ vocales, produce no perceptible alteration in the voice.

Tumours of different kinds, which rise from the bottom of the ventricles and obstruct them, render the voice hoarse, and as it were resembling the sound of a rasp (râpeuse). A considerable tumefaction of the mucous membrane of the ventricles produces the same effect.

The more or less complete destruction of one of the chordæ vocales, the other being intact, often produces not more disturbance in the voice than the preceding lesions ; at other times, on the contrary, it is sufficient to produce aphonia.

The aphonia is complete if the two thyro-arytenoid ligaments are simultaneously changed.

The extinction of the voice is carried to the highest degree if the thyro-arytenoid muscles have undergone one of the alterations already noticed.

These different facts fully confirm those disclosed by experimental physiology.

Neither should we forget, that, by the mere fact of nervous influence, the voice may undergo a great number of modifications with respect to its strength, its timbre, its different tones, without pathological anatomy being in any way able to account for them.

The chronic laryngitis of phthisical persons is an affection most usually free from pain. Ask the patients in whom, after death, the larynx is found ulcerated and most seriously disorganised ; the greater part of them will affirm that they feel at most but a little constriction or heat in the throat, and it is actually only in some exceptional cases that they feel real pain. In the latter case, the post mortem shows no other lesion than is observed in those who have never suffered any pain of the larynx. This frequent absence of pain is here a phenomenon so much the more remarkable, as the larynx, in the healthy state, is the seat of exquisite sensibility, as may be readily proved by the following experiment :—In a living animal, make an incision into the trachea, immediately below the cricoid cartilage ; introduce a probe through the opening, carry it into the larynx ; the animal will evince the most intense uneasiness ; he will make the greatest efforts to free himself from the pain which he seems to suffer. Carry the same instrument into the trachea, depress it as far as the origin of the bronchi ; the animal will remain calm. This great sensibility of the larynx is connected with the quantity, size, and nature of the nerves which are distributed to it ; and yet it is not excited, or but seldom so, by the stimulus of inflammation : so true is it that we cannot always argue from what happens in the healthy state to that which will happen in the morbid state. Here again, as in a thousand other circumstances, we must admit as the expression of a fact a susceptibility extremely variable according to the individuals, by virtue of which such a lesion of an organ will be free from pain in one, and will excite in another the most intolerable sufferings ; will announce itself in one case only by some local symptoms, and in another case will produce universal disturbance of all the functions, etc. Hereafter we shall also see intestinal ulcerations, so common in phthisical patients, develope themselves in them still more completely free from pain, than ulcerations of the larynx.

Chronic laryngitis appears to contribute to the increase of the dyspnœa in phthisical subjects only when the ordinary calibre of the larynx is perceptibly diminished in some point of its extent, either by unusual tumefaction of the mucous membrane, or by a tumour which rises from the surface of this membrane, or which, being developed in the subjacent parts, pushes it before it, or by an œdema of the glottis, etc.

85. What relation between the development of chronic laryngitis and that of

pulmonary tubercles? The following is what observation has taught us on this point:—

In several persons inflammation of the larynx is the very commencement of the disease.

In others it is only during the course of pulmonary phthisis, at a more or less advanced period of the disease, that the larynx begins to be seriously affected, as if, in this case, the inflammation had been propagated from below upwards, by a course contrary to what it had assumed in the preceding case. Again, consecutive laryngitis appears to us more common in phthisical subjects than the primary. But even in the case where the larynx has become affected only consecutively to the lungs, it may happen that the tubercles of which the latter are the seat, are discoverable only by opening the body; so that in cases of this kind one would naturally be led to refer the cough, the dyspnœa, hemoptysis, marasmus, and hectic fever solely to the affection of the larynx, which is sufficiently characterised by the change of voice; in a word, one would admit the separate existence of laryngeal phthisis. But observation shows that nothing is more uncommon than this latter affection existing independently of pulmonary phthisis. This is proved by the autopsy. Thus, then, even when in a person who presents symptoms of chronic laryngitis, with emaciation and other signs of phthisis, nothing indicates the existence of pulmonary tubercles, the probabilities for admitting these are so strong as to be almost equivalent to certainty. Besides, in a certain number of cases, it is only by the autopsy that one can acquire the conviction that the lungs contain tubercles, and that laryngitis, which seems to be the principal disease, is really but a secondary affection. Such is the case when, amidst the numerous tubercles seated in the pulmonary parenchyma, none of them are sensibly softened, and when the pulmonary tissue around them has continued pervious to air. Then auscultation and percussion can afford no information. At other times, after the affection of the larynx has alone been announced by characteristic symptoms for a longer or shorter time, the disease of the lung begins in its turn to manifest its existence, whether cavities succeed to softened tubercles, or whether the pulmonary parenchyma around the latter is inflamed and indurated.

86. It must not however be supposed that the rules which we have now laid down with respect to the connexion of chronic laryngitis and pulmonary tubercles are so constant, that there are not some cases in which a mere affection of the larynx may give rise to all the symptoms of pulmonary consumption.

87. From the facts now stated we shall draw the following conclusions:—

1st. Chronic laryngitis may exist idiopathically as acute laryngitis. But it is only in very rare cases that it alone can occasion symptoms of consumption. Laryngeal phthisis is then an affection not at all common.

2ndly. In most of the cases where symptoms of phthisis accompany an affection of the larynx, these symptoms must be referred to tubercles developed in the lung, whether these tubercles may have followed or preceded the laryngitis.

88. Perhaps this would be the place to establish an approximation between the different lesions so frequently observed in the larynx of phthisical patients, and the affection of the nasal fossæ of horses, known by the common term glanders. Professor Dupuy, in his splendid work on this disease, has proved that the glanders of horses is produced by tubercles developed in the nasal fossæ. We have had an opportunity of opening a great number of glandered horses, and have been able to verify the accuracy of the opinion published by this distinguished veterinary surgeon.

In almost all the glandered horses which we have examined, the lungs contained tubercles varying in number and in size. But in some the affection of the lung was as yet very slight, merely a few tubercles were scattered through its parenchyma, whilst the disease of the nasal fossæ had been carried to a very high degree. In others, on the contrary, numerous and vast cavities already filled the lungs, and still the disease of the nasal fossæ appeared as yet only at its commencement. Finally, in other horses, the nasal fossæ and pulmonary parenchyma were affected nearly equally.

Glanders traced in its different phases of development has presented different species of lesions, which were probably but different degrees of the same alteration.

Often, for example, the nasal fossæ of phthisical horses presented no other modification of their normal state than greater or less redness of the mucous membrane, with puffiness of its tissue, injection and thickening of the cellulo-fibrous tissue which lines it.

In other horses, round granulations arose in greater or less number from the mucous membrane, altogether resembling hypertrophied mucous follicles, whose orifice was sometimes dilated, sometimes, on the contrary, less apparent than usual ; around these follicles we often found the mucous membrane inflamed, at other times it was white, or exhibited at most but slight vascular injection, whether the previous inflammation of this membrane had disappeared, leaving behind it no trace except hypertrophy of these follicles, or the latter were inflamed independently of the mucous membrane, one of whose elements they constitute. Thus we daily observe idiopathic separate alterations of the cutaneous follicles, the skin which surrounds them remaining apparently healthy. Thus long trains of lymphatic ganglions are inflamed and engorged, without the cellular tissue through which they pass at all participating in their inflammatory state.

Among these follicles some were more or less red, others greyish ; others had a whitish colour, which seemed owing to some purulent matter which filled their cavity. Finally, in several the pus was more concrete, of a yellowish white, and there resulted from it a small round and friable body which constituted what is ordinarily called a tubercle, but which, on comparing it with the other granulations which surrounded it, seemed to be nothing but a diseased follicle. This matter, called tuberculous, was oftentimes so abundant that it covered the greater part of the pituitary membrane.

On the other hand, the cellulo-fibrous tissue, subjacent to the mucous membrane, likewise presented remarkable alterations. Being in a state of chronic inflammation, it was changed into a whitish substance, sometimes hard and breaking under the scalpel, like schirrus, sometimes friable and approaching to tubercle.

Finally, as a common termination of these different alterations, the pituitary membrane presented ulcerations varying in form and in size, the bottom of which was formed sometimes of the indurated cellular tissue, which was frequently studded with small tuberculous masses, sometimes of the cartilages themselves, more or less altered, frequently injected with blood and tending to become ossified.

Thus in the horse, as in man, the upper part of the respiratory passages (for in the horse the nasal fossæ serve much more directly to respiration than in man) scarcely ever undergo any serious alteration without tubercles existing in the pulmonary parenchyma. The nasal fossæ of glandered horses have also presented lesions closely resembling those whose existence we have discovered in the larynx of men affected with pulmonary phthisis.

89. When treating of simple pulmonary catarrh in the preceding part of this work, we already pointed out certain alterations of the trachea and bronchi. They are such as are frequently found with different degrees of frequency in phthisical patients. It would be unnecessary then to recur to them here. In several of these patients, for example, we have found some bronchial branches perceptibly dilated ; in a very great number the parietes of these tubes appeared to be considerably thickened. Ulcerations of the mucous membrane are common

enough in the bronchi which carry air to the pulmonary lobes most filled with tubercles*. We once observed a rather singular arrangement of these ulcerations. It was in an individual, one of whose lungs contained much more tubercles than the other. The half of the trachea on the side of the lung most diseased was perforated with ulcerations through its entire extent; the other half scarcely presented any. The inner surface of the principal bronchial branches on the same side presented but one single ulceration, in the midst of which there were seen scattered—1st. Species of reddish fungous growths, the remains (debris) of the mucous membrane; 2ndly, portions of cartilages, which, like ridges, were detached from the bronchial parietes.

SECTION II.

DISEASES OF THE PULMONARY PARENCHYMA.

90. The alterations presented by the portions of pulmonary parenchyma which surround tubercles, are very frequent, and often more distressing than the tuberculous affection itself.

We already mentioned (Chap. II.) that pulmonary tubercles recognise for their commencement in some cases an acute inflammation of the parenchyma, indicated by the ordinary symptoms of pleuro-pneumonia. This inflammation may disappear, and it may happen that in the dead body no other traces are found but the tubercles themselves. At other times, the pneumonia, instead of being resolved, passes into the chronic state, or else it is chronic from its commencement. It is in the midst of the portions of pulmonary parenchyma, in this state of chronic inflammation, that tubercles frequently appear to have had their origin. What seems to prove that in this case their development did not precede the pneumonia, is this, that they are found very small in size and very few in number, scattered in the midst of a vast extent of hepatised lung. Frequently, for instance, we have found but two, three or four small miliary tubercles in one entire indurated lobe; they seem then to be developed in the midst of this, as they are produced at the bottom of ulcerations of the mucous membranes, within false membranes, etc.

But if observation proves that in a certain number of cases pneumonia precedes tubercles, and is even the occasional cause of them; observation also tells us that much more commonly tubercles are developed with previous pneumonia discoverable by us during life, and that the latter supervenes at a later period only as a complication. In fact, in the greater number of phthisical patients, the invasion of tubercles is accompanied only by the symptoms of simple bronchitis; the sound of the thoracic parietes is retained in its normal state; the respiratory murmur is not altered. We do not mean to say, however, that, in the very point where each tubercle is formed, this formation has not been preceded and occasioned by a process of congestion or irritation more or less analogous to that which constitutes pneumonia. We have already dwelt on this kind of pneumonia, which is exactly limited to the point where the tubercle is to be developed. The autopsy proves its existence, and may even prove in more than one case that it has preceded the formation of the tubercles; but how are we to recognise it during life?

---

* According to M. Louis, these several changes observed in the mucous membranes, the larynx, the trachea, depend more or less on the passage of the sputa, and to this opinion he is led by the circumstance that it is the posterior parts of these organs that are always affected. In this opinion he was anticipated by M. Broussais, in his *Histoire des Phlegmasies Chroniques*, tom. ii., where he says, in speaking of the frequency of laryngeal and tracheal inflammation in phthisis—Je n'en ai pas etudié les causes determinantes d'une manière bien particulière; mais on presume assez que les particules âcres et fetides qui s'elevent des foyers purulents doivent en faciliter efficacement l'action.—Trans.

"The close connexion of these lesions with phthisis is established by the fact that Louis found ulceration of the epiglottis and larynx in *one-fifth*, and ulceration of the trachea in *one-third* of the cases which he examined; whereas he found it once only in one hundred and twenty-two patients who died of other chronic diseases. The same accurate pathologist discovered that these ulcerations occur more frequently in men than in women in the proportion of two to one."—(Dr. James Clark's Treatise on Consumption.)—Trans.

The pneumonia, less circumscribed and recognisable by the symptoms which presents itself as an intercurrent affection during the course of pulmonary phthisis, may be acute or chronic. In the acute state it is remarkable for the frequency of its returns. It is not uncommon to see phthisical patients, who, during the progress of their disease, have had well-marked symptoms of pneumonia, up to twelve or fifteen times. This intercurrent inflammation is often easily recognised; thus the sputa suddenly change character, they become rusty, viscid, and transparent; care should be taken not to confound them with simple hemoptysis; in the latter, the blood expectorated is not intimately mixed with mucus, as in the sputa of pneumonia. At the same time the dyspnœa perceptibly increases; fever becomes more intense and continued: auscultation and percussion may yield the different signs by which pneumonia is usually indicated.

But it is not always thus easy to diagnose an acute inflammation developed around or in the vicinity of pulmonary tubercles. The expectoration, for instance, may not change character, it may remain that which appertains either to chronic bronchitis, or to a tuberculous excavation. The previous existence of different râles having their site either in the bronchi, or in the tuberculous excavations, may entirely annul the information afforded by auscultation, with respect to the invasion of an inflammation of the parenchyma; it may also happen that percussion is no longer useful in consequence of the coincidence of an old pulmonary hepatisation, or of a collection of tubercles. In fine, the dyspnœa itself may not perceptibly increase; and even when the difficulty of the respiration should become greater, that would not suffice to characterise pneumonia, since many different causes may produce a similar increase of the dyspnœa.

The intercurrent pneumonia of phthisical patients, too often overlooked and neglected, causes the premature death of a great number of these patients; at other times it does not bring on their immediate death, but, even in this case, it is always mischievous, inasmuch as it favours the development of the tubercles and hastens their softening. More than once have we seen patients in whom the pulmonary phthisis had for a considerable time proceeded but very slowly; an attack of pneumonia supervened and disappeared after having run through its usual periods; but from that time the process of pulmonary *tuberculisation* took on an astonishing degree of activity, not only on the side where the acute inflammation had existed, but also, what was very remarkable, in the opposite lung, and in a very short space of time immense caverns were formed.

The chronic pneumonia of phthisical patients, whether it may, or may not have succeeded an acute inflammation, or whether it may have preceded or followed the development of tubercles, does not occasion such immediate danger as acute pneumonia; but it produces results oftentimes more distressing than those depending on the tubercles; it occasions particular symptoms, which it is important to distinguish from those which are connected with tubercles; further, it gives rise to different alterations of the lung, whose nature does not appear to us to have been duly appreciated up to the present time.

The only signs, which, during life, can indicate the existence of chronic pneumonia complicating tubercles, are those afforded by percussion and auscultation. Still it must be noticed, that if there be but simple chronic engorgement of the pulmonary parenchyma, percussion is scarcely of any use, and auscultation itself can, in our opinion, afford but very doubtful signs. That crepitous râle, which, according to Laennec, should then be heard, does not seem to us so characteristic, that, becoming confounded by imperceptible shades with the mucous râle, it may not also be met with in simple bronchitis *. When there is, on the contrary, pulmonary hepatisation, the sound of the thoracic parietes becomes dull, and this dulness is most frequently observed in the points corresponding to the summit of the lung: it is there, in fact, that the greatest number of tubercles exist, and that they most frequently become complicated with pneumonia. At the same time auscultation affords different signs, which vary according as the tubercles are still crude in the midst of the indurated pulmonary parenchyma, or already changed into caverns. In the former case there is either total absence of every species of respiratory murmur and of râle, or else different varieties of râles are heard, which have their site in the bronchi, (the sibilous, the snoring (ronflant) râles, the mucous râle with large or small bullæ, and even the crepitous râle,) or else these different sounds give place to the phenomenon of *bronchial respiration.* Then the resonance of the voice may be such as to simulate pectoriloquy more or less perfectly. In the second case, however small in extent the caverns may be, auscultation gives no information regarding the state of the parenchyma around them; only the great evidence of pectoriloquy may incline us to suspect that the cavern is surrounded by an indurated parenchyma.

The sputa can no longer afford us any light here, since in the case where the pneumonia is chronic, they are never other than those of simple bronchitis. With respect to the dyspnœa, it would appear, *a priori*, that it should be, in this case, greater than when the tubercles are surrounded by a tissue still pervious to air, and yet observation has convinced us that, in the majority of circumstances, the breathing was not perceptibly more embarrassed in the one case than in the other. It seems that then a sort of supplementary respiration is established in the portions of the lung which have remained pervious to the air. At the very time we are writing this article, there is in the wards of M. Lerminier a man sixty-four years of age, who, without the help of auscultation and percussion, might seem to be affected only with mere chronic pulmonary catarrh. In fact, he has had a cough for a considerable time, and expectorates a considerable quantity of puriform mucus every day, which is often divided into round patches, which float on a turbid serum. In other respects he has no fever, the breathing does not appear embarrassed, speech free and natural, voice strong, can lie in any position, has considerable embonpoint, face has a good complexion, and his muscular strength is proportioned to his age, But if the thorax be percussed, in the space included between the right clavicle and breast of the same side, we discover a very dull sound, and in this same extent the natural murmur of the pulmonary expansions is replaced by the phenomenon of bronchial respiration, mixed at intervals with some mucous râle. There is no doubt from these signs that this old man is affected with chronic inflammation of the upper lobe of the right lung; we consider even as very probable, from other observations, the existence of a certain number of tuberculous granulations in the midst of the portion of the indurated lung; and yet the breathing is not more embarrassed than in persons affected with simple chronic bronchitis; the function of nutrition is not perceptibly changed.

Considered with respect to its anatomical characters, the chronic inflammation which prevails around pulmonary tubercles presents several varieties. There may be simple engorgement of the parenchyma, which then presents different shades of redness. Most frequently, the pulmonary tissue is indurated, and this induration may exist with red, grey, or black colouring: we shall speak only of this latter, of its causes and its nature.

---

* In the preceding part we endeavoured to prove that the *crepitous* and *mucous* râles are but simple varieties of one and the same sound, which, with respect to each, takes place in the greater or less ramifications of the bronchial tree.

The black induration of the lung has been considered as the result of the infiltration of its tissue by a matter of new production, by *melanosis*. This matter, it is said, is united or combined, molecule by molecule, with the very tissue of the organ. We can understand how this may happen in a certain number of cases; we can understand that the colouring matter which constitutes melanosis may be arranged and solidified in each of the meshes or areolæ of the parenchyma, whence will result the appearance of hardening of this latter, in the same manner as it may form a solid deposition in a circumscribed point, and constitute there a melanic mass or concretion. But we think it easily proved that in the greater number of cases of induration of an organ, which is at the same time coloured black, it is independent of this black colour, and is the mere result of chronic inflammation. Such is particularly the case of black induration of the lung (phthisis with melanosis). Accordingly we find this same induration of the pulmonary parenchyma with all possible colours, red, light grey, deep grey, slate colour. In certain cases we may follow in one and the same lung the insensible transition from the grey tint to the deepest slate colour; and, where the latter does not exist, the pulmonary parenchyma is not less hard. We must then necessarily conclude that the state of hardening of the lung with black colouring does not essentially differ from this same state of hardening with whitish or greyish colouring. In this latter case we do not hesitate to refer the pulmonary induration to simple chronic inflammation: why not make the black induration also depend on it? A mere shade of colour is certainly not sufficient to warrant one in considering as different two states, which in other respects are entirely similar, whether with regard to their other anatomical characters, or in reference to the symptoms which indicated them during life, or, in fine, with regard to the causes which gave rise to them. Thus then we must either consider the phthisis with melanosis of Bayle, as a mere variety of chronic pneumonia, or still further increase the number of phthises and refer to them the white, grey, and yellow induration of the pulmonary parenchyma, as so many distinct species.

If the preceding considerations lead us to admit that black induration of the lung is nothing else than chronic pneumonia, with the addition of a colouring matter, we may conceive cases where the latter may form without the tissue, where it originated, being previously indurated; this is what the authors, who considered the induration as appertaining to the presence of the melanosis, could not admit. Laennec has also carefully separated from it this simple black colour, which is often observed in the lungs, in the form of lines and patches, without the ordinary consistence of these organs being in any respect changed. But if it is proved that the induration of the lung is not the product of melanosis, there can no longer be any reason for establishing a distinction between the black colouring, which accompanies certain pulmonary indurations, and that which exists without induration, and of which Laennec has made a separate class, under the name of *black pulmonary matter*. There are cases where, in the midst of a pulmonary parenchyma which is generally sound, there are found scattered some black and hard masses, which, at first sight, seem foreign to the tissue of the lung; but isolate a lobule in which one of these masses exists, without cutting or tearing it, and you will see this indurated lobule, either partially or entirely, present several shades of colouring, greyish in several points, brownish in others, and altogether black, where before this examination you had recognised nothing but the existence of a melanic mass: then the latter will present to you its real appearance; it will no longer appear any thing but a portion of the pulmonary tissue, chronically inflamed and coloured black, as the neighbouring portions, equally indurated, are coloured red, grey, or brown.

The black induration of the lung has been observed at all ages of life. I have seen it through the entire of the upper lobe of the left lung in a girl nine years old. I have often found it at the La Charité in persons not thirty years old. However, it is right to mention that it is principally in old persons that chronic pneumonia is most frequently accompanied with black colouring, as if the disposition to the formation of tubercles, which is very marked in youth, was replaced at a later period by the disposition to the secretion of melanic matter. It is also a remarkable circumstance that, when the latter is very abundant, and when at the same time the lung contains tubercles, these, in a certain number of cases, seem to have a tendency to heal, or at least their development seems arrested; this seems to be indicated, as we shall hereafter see, by their cretaceous appearance, and their tendency to be changed into stony concretions.

In the 33rd case of his work on phthisis, Bayle speaks of a lung which, after having been cut into, presented an appearance a little similar to that of certain granites. It consisted, says the author, of a vast number of round granulations, of a black slate colour, and the size of a pea, connected by a substance which was softer, but of the same colour. Bayle considers this case as an instance of granular phthisis with melanosis. But in these black granulations we can see nothing but portions of lobules, which, consecutively to chronic inflammation, become indurated and blackened. Observe that Bayle clearly states that around the granulations the pulmonary parenchyma was softer, a circumstance which completely accords with what we have said regarding the state of the pulmonary parenchyma around the granulations, when we strove to ascertain their nature. (Chap. I.) This softer parenchyma, adds Bayle, was also coloured black. That which was called melanosis in the granulations, should then, according to Laennec, have been called pulmonary black matter. But no, it is always the same secretion, the same deposition of colouring matter; only the tissue where this secretion takes place has in several points undergone a change of consistence, and the form of granulation is the result of these partial indurations.

If we follow the same colouring in other tissues, we shall first find some where it is the result of a normal secretion. This is what happens, both in man, with respect to the choroid membrane and bronchial ganglions, and especially in certain animals, where the black colour is diffused naturally through several tissues, and in particular through the tegumentary membranes internal or external. As a morbid production we find a much greater number of instances of it in man himself; thus the gastro-intestinal mucous membrane when in a state of chronic inflammation, the false membranes of the peritoneum, the arterial ulcerations around their edges or within them, the portions of cellular tissue which form the parietes of fistulæ or abscesses, frequently present a black colour more or less deep. It is in these same circumstances that the pulmonary parenchyma becomes indurated and blackened. This unusual colouring may result, either from a mere change which the blood undergoes by its continued stagnation in the tissues *, or probably from the secretion of a particular colouring matter, which is produced in the several tissues just mentioned under the influence of an inflammatory process, as it is formed naturally in the choroid. The lung, more than any other organ, when affected with chronic inflammation, has a peculiar tendency to acquire the black colour; this then takes hold of the parietes of the pulmonary vesicles, or, if you will, of the parenchyma of the lobules, as, in consequence of the mere progress of age, and independently of all previous inflammation, it has a tendency to form in the interlobular spaces. But it seems to me that in the lung at least the sole existence of this black colour cannot constitute a particular accidental

---

* The experiments of Hunter and of other physiologists have proved that the blood whose circulation is retarded or suspended in a part, assumes there a blackish tint more and more deep, whether it still be contained in the vessels, or has become stagnant outside of them.

tissue, as Laennec laid it down, when he designated the black induration of the pulmonary parenchyma by the name of melanosis. The phthisis with melanosis of Bayle seems to us nothing else than mere chronic pneumonia, having for its anatomical character the usual hepatisation together with a black colour. The symptoms assigned by Bayle to this species are, moreover, precisely the same as those appertaining to every induration of the pulmonary parenchyma. It is rather unusual to find no tubercle in a lung affected with black induration. Bayle has given but three cases of it in his work. The identity of the symptoms of pulmonary melanosis and of chronic pneumonia, in other words, of black induration of the lung, and of its red or grey induration, we have frequently observed.

SECTION III.

DISEASES OF THE PLEURA.

91. The pleura presents different alterations in phthisical patients, more often even then the pulmonary parenchyma. The greater part of these alterations are the result of an acute or chronic inflammation.

In almost all cases where the lung contains tubercles, intimate adhesions unite the pleuræ costalis and pulmonalis to a greater or less extent. These adhesions correspond in general with the number of the tubercles; they are more considerable when the pulmonary parenchyma around them is indurated. They are principally found in those points corresponding to the parts of the lung where the tubercles are collected in the greatest quantity. In some cases where the lung, healthy in other parts, presented but one simple mass of tubercles united in one part, near the periphery of the organ, we found the pleura free from adhesion every where except where the tuberculous mass existed.

Sometimes no adhesions are found, and the pleura costalis alone seems to have been altered. It is then found thickened in separate patches, which correspond to collections of tubercles, or rather this thickening depends on a secretion of coagulable lymph, which occurred on one or other of the surfaces of the pleura. We have sometimes found these partial thickenings of the pleura pulmonalis, whether real or apparent, of a deep black colour. Then the circumference of the lung was studded with black patches which rose several lines above the level of the surface of the organ, thus seeming to constitute real melanic tumours. But in several of them it was easy to perceive their real nature; in fact, they were not all uniformly black; a considerable number of them presented a white or greyish tint, and in this state they seemed to be nothing but an accumulation of false membranes on the free surface of the pleura, or, more frequently still, a perceptible thickening of the very fine but very vascular cellular tissue uniting the pleura to the lung. In other places these greyish patches were partially coloured a light brown tint, which in others gradually increased in intensity and extent. It became evident then that the black tumours were but those same white patches with the addition of a black colouring matter, but that they should no more be considered here as a peculiar tissue than in the lung, where we have already considered their formation and their nature.

We have sometimes found, in one or more points of the pleura pulmonalis, a sort of puckering of this membrane with whitish thickening of its tissue. This puckering we thought remarkable, as it coincided with the existence of a cretaceous tubercle situated on the surface. The entire presented the following arrangement: in some one point of the circumference of the lung there was observed a circumscribed induration, from which, as from a centre, there arose several radiating lines appertaining to the pleura, which in this place seemed as it were to have been folded. On making an incision into the central induration, it was found to be formed by a tubercle not large in size, of cretaceous consistence, which was surrounded to the extent of some lines by a black and hard tissue. Does not this fact seem to confirm the idea already expressed, namely, that cretaceous tubercles are those which, by the absorption of their more liquid parts, have diminished in size, and have a tendency to heal? How, in fact, are we to account for that species of puckering, or radiated folding of the pleura, otherwise than by supposing that this membrane, having been previously raised by a large tubercle, was then as it were dragged and brought back towards the point where the tubercle existed, according as the latter lessened in size? Does not the skin present an almost similar puckering, when the tissues subjacent to it, and to which it has become more adherent than usual, have suffered any loss of substance?

92. Tubercles are often enough developed in phthisical patients amidst the false membranes of the pleura; in them also all inflammations of serous membranes have a remarkable tendency to become complicated with the formation of tubercles. Thus, for instance, we lately opened the body of a young man whose lungs contained tubercles, and who also presented to us a considerable quantity of them in false membranes of the pericardium, pleura, and peritoneum. We do not remember to have seen tubercles produced simultaneously in these different serous membranes, without the lungs also containing some. It is necessary to be understood with respect to what we mean by tubercles in serous membranes. They are studded with a great number of whitish granulations, which resemble pulmonary tubercles only in their rounded form; these granulations seem to be nothing but rudiments of false membranes, depositions of coagulable and organisable matter on the free surface of the membrane. Such granulations exist in many persons who are not phthisical. But in those who have a predisposition to tuberculisation, these granulations, by increasing in size, seem to take on another nature; they become like clots of curdled milk, whether they remain separate, or by uniting constitute masses of greater or less size; occasionally some are found as if depositions between the laminæ of false membranes. To what are these variable appearances to be attributed? They depend, no doubt, on the modifications occasioned by individual predisposition in the morbid secretion of the serous membrane.

In this way the many kinds of pus are explained which may form in the middle of an abscess. In one person, for instance, it will be laudable pus, as it is called; in another it will be the pus called scrofulous, more or less resembling tuberculous matter. We cannot refuse to acknowledge it as a general fact, and to lay it down as a sort of law, that there are persons in whom every congestion, irritation, or inflammation, in a word every unusual process of nutrition, tends to terminate in the secretion of the particular and well-marked matter which constitutes tubercles. It also appears that for the very reason that this matter is already formed in one point of the system, that is a reason why it is more easily produced elsewhere. In an individual whom we had an opportunity of examining, and who had tubercles in the serous membranes of the thorax and abdomen, the pia mater, infiltrated with serum, was also studded, on the convexity of the hemispheres, with small round whitish clots, consisting of a sort of concrete pus, which differed very little from tuberculous matter properly so called. In a preceding portion of this work, we have spoken of another patient, whose arm was for a long time the seat of vast depositions of pus, which had their commencement in an abscess in the axilla, and in whom one might really trace the gradual change of the pus into apparently tuberculous matter. Thus then the more we advance, the more we see facts multiply, which should incline us to consider tubercles as a mere form of morbid secretion.

Instead of acquiring the properties which constitute them tuberculous matter, if I may so say, the granulations of the pleura may, without enlarging, assume a harder consistence, and ultimately become stony. We saw this in a woman, who died of encysted dropsy of the ovary. The free surface of each pleura pulmonalis was in a manner roughened with small rounded granulations, of a stony consistence, similar to grains of sand. The pleura presented no other trace of inflammation; the parenchyma of the two lungs was perfectly sound.

In all the cases where we have found tubercles in the pleura, whether secreted on the free surface of the serous membrane, or deposited between pre-existing false membranes, we met them in the lungs; most commonly they exist there in great numbers, and the tuberculous affection of the lung is then the principal disease. Once only have we seen the reverse: considerable tuberculous masses existed not only in one of the pleuræ, but in other organs also, whilst the lungs scarcely contained any tubercles; and again the latter existed only on the side opposite to that where the pleura presented them — we shall give an account of this case.

CASE 12. *Numerous tubercles developed in the pleura and in several other organs, the lung containing but very few, and only on one side.*

A woman, thirty-five years of age, was in a state of great emaciation, when she entered the La Charité, in the November of 1825. She complained of having a cough for a long time; she had never spit blood; respiration not much impeded; the expectoration purely catarrhal. Auscultation detected some dry or moist bronchial râle in different points, but no sign indicating the existence of pulmonary caverns, and the existence of tubercles could only be suspected. The abdomen was at the same time swollen and painful; percussion discovered evident fluctuation in it; there were alternations of diarrhœa and of constipation. However, the patient became more and more debilitated, the diarrhœa became permanent, and she died in the beginning of December.

Post mortem. Immediately behind the sternum, the intercostal muscles and cartilages of the ribs, considerable masses of tuberculous matter existed, resting on the pericardium and filling the anterior mediastinum. All the left lung was encompassed from its summit to its base by a thick layer of a yellowish white matter which was friable and tuberculous, as was that which filled the mediastinum; in some points this layer was more than a finger's breadth in thickness; it existed between the pleuræ costalis and pulmonalis; a considerable mass of this same matter was interposed between the diaphragm and the left lung. This latter, carefully examined, seemed healthy and exempt from tubercles through its entire extent. The right lung, on the contrary, whose serous envelope presented no other alteration than some cellular adhesions of small extent, contained towards its summit a small tuberculous mass of the size of a nut. In the remainder of its extent were observed small bodies of a dull white colour, being at the utmost the size of a grain of millet, which seemed to be commencing tubercles. Between them, as also around the tuberculous mass in the summit, the pulmonary parenchyma was perfectly healthy.

A considerable quantity of serum was effused into the cavity of the peritoneum; the latter membrane was studded by a considerable number of granulations of a yellowish white colour, and friable. They were real tubercles. Between the proper tissue of the spleen and its fibro-serous envelope, a thick layer of tuberculous matter was interposed, similar to that which filled the left pleura. The parenchyma also of the spleen was studded with small round and whitish bodies, similar to those in the right lung. Lastly, in the substance also of the uterus, very near its cavity, or rather between its proper tissue and the membrane lining the parietes of this cavity, a friable mass of tuberculous matter was deposited about the size of a large nut. Nothing remarkable existed in the other organs.

93. The different alterations now described are formed gradually, according as the pulmonary tubercles become developed and multiplied. This production is

especially indicated by those pains, fixed or moveable, transient or permanent, of which the thoracic parietes are so often the seat in phthisical patients, and which are not accompanied by any serious symptom. In several of these patients the pains now in question are so rare and fugitive, that they do not complain of them; in others they are more severe; then they may render lying on the side where they occur impossible; they are very painfully felt, both during each inspiratory movement, as also during every attempt to cough. Ordinarily of but short duration we have seen them sometimes continue for several months in succession in the same state. They are most frequently felt where, after death, adhesions are most usually found. They are, for instance, common enough in the dorsal region between the scapulæ, or beneath either of the clavicles.

The close adhesions which, in phthisical patients, so often unite to a greater or less extent the pleura costalis and pleura pulmonalis, account for the rarity of pleuritic effusions in these same patients; these effusions can actually take place only where there are as yet no adhesions; also when they do exist they are usually partial; they do not rise, for instance, above the level of the lower lobe of either lung; sometimes, again, they are seen to form in the pleura corresponding to the lung which contains the least tubercles. The formation of a pleuritic effusion, whether single or double, in phthisical patients, is always accompanied by serious consequences; by this effusion the portions of lung which had still remained pervious to air become compressed, and are consequently rendered useless; the breathing becomes more and more embarrassed, and speedy death is the result of this fatal complication. We refer to another part of this work with respect to the nature of the signs which may announce it.

94. It is almost exclusively in persons affected with pulmonary tubercles that we find the cavity of the pleuræ filled with elastic fluids. Nothing, in fact, is more uncommon than idiopathic pneumo-thorax, that is a pneumo-thorax produced by gaseous exhalation from the pleura. In all the cases of pneumo-thorax which we have had an opportunity of seeing, the existence of a gas in the cavity of the pleura was the result of the existence of a pulmonary fistula, which established a free communication between the interior of the pleura and a tuberculous excavation, into which some bronchial tubes opened. The most common situation of these fistulæ is towards the summit of the lung, where caverns are most frequently met; being often very small, concealed by the lung, surrounded by adhesions, they are not found without some difficulty. We have seen that in some cases, where the intestines presented but a solitary small ulceration, this ulceration gained in depth, and occasioned a perforation of the intestinal parietes, a perforation which did not take place in other circumstances where the digestive mucous membrane resembled, as it were, a sieve, in consequence of numerous and vast ulcerations. We have also seen cases in which the lung contained but a single excavation scarcely large enough to admit a nut; this excavation, situate immediately beneath the pleura, and constituting a part of its parietes, had caused its inflammation, and subsequently its laceration, the result of which was the formation of a pneumo-thorax. Sometimes solid adhesions, thick false membranes, form as it were a barrier which prevents a cavern which has perforated the pleura from pouring liquids or gases into the cavity of this membrane.

The elastic fluids which the pleura contains in the cases now in question must then be nothing else but atmospheric air conveyed by the bronchial tubes which open into the tuberculous excavations*. It appears, however, that this atmospheric air once effused into the pleura, may undergo considerable modifications there with respect to its composition. When it is mixed with pus, which is the most common case, its purity is altered by the production of hydro-sulphuric acid gas in a quantity sufficient for the sense of smell to recognise its presence. We very lately had an opportunity of ascertaining this. In England, Mr. Davy found that gas found in the pleura, and which came, as here, from pulmonary caverns, contained a quantity of carbonic acid much greater than that which ordinarily exists in atmospheric air*.

---

* Laennec considered that the elastic fluids contained in the pleura in these cases, were the product of the decomposition of some portion of the effused albuminous and puriform matter. Modern pathologists, however, doubt whether such is ever the source of pneumo-thorax. "It may be laid down as proved," says Dr. Houghton, "that where pneumo-thorax exists the

With respect to the very marked symptoms which announce in phthisical patients the complication of pneumo-thorax, whether alone or combined with an effusion of liquid, we shall say more in another place (*Diseases of the Pleura*).

SECTION IV.

DISEASES OF THE BRONCHIAL GANGLIONS.

95. The tuberculous degenerescence of these ganglions in phthisical adults is rather uncommon ; in children, on the contrary, it is much more common : which corresponds with what is observed regarding the other lymphatic glands of the body. Thus, for instance, in childhood most of the cases of chronic enteritis occasion engorgement of the glands of the mesentery, the case is no longer the same after the period of puberty ; then, consecutively to the intestinal affection, the glands of the mesentery become tumefied, but without being *tuberculated* in the majority of cases ; this may be observed, for instance, in phthisical patients whose intestines have been for a long time the seat of numerous ulcerations.

Before puberty it is not uncommon to find the tuberculous affection much more considerable in the bronchial ganglions than in the pulmonary parenchyma. We have seen, for example, the posterior mediastinum filled with enormous masses of these ganglions, which surrounded, like beads, the trachea and its divisions, whilst in the lung we find only some miliary tubercles surrounded by a healthy tissue ; but it should not be forgotten that at the same time the mucous membrane of the air-passages presented traces of inflammation more or less intense. In some cases the ganglions alone seemed to be tuberculous ; the lung presented no appearance of accidental production ; the bronchi were red.

In the adult we have also ascertained the different relations established between the morbid state of the bronchial ganglions on the one hand, and that of the respiratory apparatus on the other. Thus in him we have also observed—

1st. A perceptible tuberculous degenerescence of the bronchial ganglions coinciding with numerous pulmonary tubercles.

2ndly. A similar state of the ganglions, with very few tubercles in the lung.

3rdly. Lastly, some tubercles in these same ganglions, without a trace of pulmonary phthisis.

---

air has been introduced from without ; for cases of an opposite description are so rare that they must be considered as exceptions to the rule." (Cyclopæd. of Pract. Med., vol. iii. p. 452, in which article may be found some interesting and valuable observations on the nature of this affection.)—TRANS.

* The composition of the air found in the sac of the pleura has also been chemically examined by Dr. Apjohn, Professor of Chemistry to the Royal College of Surgeons in Ireland. (Dub. Trans. of Coll. of Physicians.) According to his analysis, one hundred parts of it consisted of eight parts of carbonic acid, ten parts of oxygen, and eighty-two of nitrogen.—TRANS.

In this latter case we have most frequently met marks of inflammation in the air tubes. If the upper part of the latter is the part most affected, then it is no longer in the interior of the thorax, it is in the cervical region, around the larynx and trachea, that the lymphatic glands are developed and have a tendency to become tuberculated. They are then sometimes placed between the posterior part of the trachea and œsophagus, and separate these two tubes from one another; by their becoming more and more developed they may compress the œsophagus and impede deglutition.

Finally, we have ascertained the existence of the tubercular state of the bronchial ganglions in some individuals who, during their stay in the hospital, had presented no symptom of pulmonary catarrh, and in whom the inner surface of the air-passages presented after death no trace of inflammation either ancient or recent. If, in this case, a previous bronchitis had produced the tubercular state of the ganglions, why did it not give rise to the development of tubercles in the lung? Will it be said that the predisposition to the formation of tubercles existed only in the bronchial ganglions and not in the pulmonary parenchyma?

96. In some cases we have found real suppuration in these ganglions. From their black and tumefied tissue there flowed, either by simple incision or by pressure, a purulent liquid similar to that which flows from a slice of lung in the third stage of inflammation. The tissue of the gland was at the same time softened; it was reduced to a pulp under the finger. At other times it was compressed, and perhaps destroyed by the pus which was collected into an abscess. We have met this real ganglionitis, which terminated in suppuration, only four times; and it is remarkable enough that, in three of these cases, there was merely chronic bronchitis, not at all of a severe character (it was in individuals labouring under heart disease), and, in the fourth case, the parenchyma of one of the lungs, which was in the second stage of inflammation in a part of its extent, presented towards its apex two or three very small cavities with smooth and, as it were, cellular parietes, filled with a purulent liquid not at all resembling softened tubercle, and which was, on the contrary, altogether identical with the pus contained in the bronchial ganglions. It is one of the rare cases in which, we think, we have best detected the existence of pulmonary abscesses. There was also in this lung another cavity scarcely large enough to hold a small pea, surrounded for the space of some lines by a hard and black tissue filled with a cretaceous substance. Lastly, in the midst of the small engorged portions of parenchyma, there existed greyish bodies scattered in different parts (the granulations of Bayle, partial induration of the pulmonary lobules), and, again, in the midst of these granulations, or beside them, very small rounded and, as it were, molecular masses of a whitish matter (nascent tuberculous masses).

Our mode of considering the production of tuberculous matter squares very well with the preceding facts. We should have been much more surprised to find pus formed in the ganglions, and not tubercles, if the latter had at the same time existed in great quantity in the lung; for the same disposition which favoured the secretion of tubercle in the latter should have produced it then, instead of pus, in the ganglions, as in all other inflamed points. But observe, such was not the case in four individuals in whom we found a ganglionitis with suppuration: in the three first there was no trace of tubercle either in the lung or elsewhere; in the fourth, to be sure, some vestiges of it were found, but they were of such a nature that some indicated a process of tuberculisation, which was no longer in activity, if I may so say (cretaceous tubercle, etc.), while the others indicated another process which was as yet but in the incipient stage. It does not, then, seem to us unreasonable to suppose, that if the ganglionitis had taken place some years before it would have terminated in tuberculisation; and that, on the other hand, if the patient's life had been prolonged, and the rudimentary tubercles found in small numbers in the lung had had time to become developed, the pus secreted by the inflamed ganglions would have become tuberculous matter: it would have been the same with respect to the pus collected in small abscesses in the apex of the lung.

97. Are tubercles of the bronchial ganglions announced by symptoms sufficiently characteristic to render it possible to establish their diagnosis? We do not think so: and this is one of those affections which cannot be discovered except by post mortem examination. There are some cases, however, where one might be inclined to suspect their existence. Such, for instance, is the following:—

Case 13.—*Symptoms of chronic bronchitis—Considerable dyspnœa, with greater debility of the respiratory murmur on the left than on the right.*

A farrier, thirty-eight years old, had enjoyed good health up to the month of February, 1824. At this time he began to cough, and up to the month of May, when he entered the La Charité, his cold still continued; his voice became hoarse and his breathing was short; he never spit blood. When we first examined him, we found the chest equally sonorous in every part; the respiratory murmur was loud and distinct over all the right side; *on the left, on the contrary, it was everywhere perceptibly weaker*, but in other respects natural. The only thing of which the patient complained was being constantly out of breath, a feeling which was considerably augmented, not only by walking on an inclined or horizontal plane, but even by the slightest motion in the bed. The dyspnœa also became considerable after each meal. The manner of lying down was quite indifferent. The cough was slight, and the expectoration catarrhal. There was no morbid symptom with regard to the heart or large vessels. Slight feverish attacks took place from time to time; the face was pale, and nutrition perceptibly altered. The following days the patient spit blood at different times; we several times ascertained the existence of some fever; the habitual dyspnœa became from time much greater. What was the cause of this great embarrassment of the respiration and of the other morbid phenomena? The continuance of the cough, the hemoptysis which recently supervened, the attacks of fever which appeared from time to time, and, lastly, the emaciation, were cogent reasons to make us dread the existence of tubercles scattered through the substance of the lung. But the suffocation was much greater than that ordinarily occasioned by tubercles, and, besides, these could scarcely account for the greater weakness of the respiratory murmur on the left than on the right; for unless miliary tubercles are sufficiently numerous to constitute a single mass by their aggregation, or else, unless the pulmonary parenchyma between them be hepatised (and then the sound would have been dull), the respiratory murmur, far from being weaker, increases in intensity. Proceeding by the method of exclusion, we were led to consider that the principal bronchus of the left side was compressed by a tumour, owing, probably to a tuberculous mass of bronchial ganglions. Thence the introduction of a less quantity of air into the left lung, and consequently the great dyspnœa. This patient left the hospital, after remaining a month, without his state being perceptibly changed.

98. Tubercles of the bronchial ganglions may, as those of the lung, take on a more or less rapid course, remain stationary, or even tend to a cure, either by the absorption of a part of their elements, the result of which is a diminution in their size, or by their evacuation, after they have become softened. When speaking of cretaceous tubercles of the lung, we laid down the reasons which rendered it probable to us that several of them had been at first ordinary tubercles, which, at the same time that their size was diminished, had changed their physical properties. We think the same thing happens also in the case of several tubercles of the bronchial ganglions. More than once we have found them consisting of cretaceous, and even stony substances, formed by molecules separated in a manner from each

other. One would say that the connexion which had previously held them together had been removed by absorption. Around them we sometimes saw a cellulo-fibrous kyst, and once even a bony one : the gland itself, consisting of a black and hard tissue, appeared withered and wrinkled, as if it had been larger in size.

In several cases where the glands and the tubercles which they contained were in the state just described, the lungs also contained cretaceous tubercles with fibrous or cartilaginous kysts, and black induration of the pulmonary parenchyma around them. We shall make a remark here which probably is not unimportant : it is not peculiarly in old persons that we have found masses similar to chalk or plaster in the bronchial ganglions ; we have met them in nearly equal frequency in middle-aged persons, from thirty-six to fifty years of age.

We have found them more rarely in persons below thirty ; however, we must not omit to mention that one of the most remarkable instances of cretaceous tuberculisation of the bronchial ganglions, with apparent withering of the latter, was presented to us by a young woman, twenty-three years old, who died of an acute gastro-enteritis during the winter of 1824. The lungs contained towards their summit some small masses, as if consisting of lime, and moreover a considerable number of miliary granulations were scattered through different points of their parenchyma.

In a preceding part of this work we have spoken of the cure of the tuberculous matter of the bronchial ganglions by evacuation. We then saw how these tubercles, on contact with the parietes of the trachea or bronchi resulting from their bifurcation, might occasion inflammation of them, and in consequence perforating ulceration. The tuberculous matter formed in the ganglion empties itself through this artificial opening and is expectorated. Thus the tuberculous affection of the bronchial glands may be cured, if, however, consequently on this salutary evacuation, the process of tuberculisation is arrested, which unfortunately is very rare. Of what use can this cure be if there be at the same time pulmonary tubercles, which is the most common case ? Still we may conceive a case in which a communication, set up by nature between a diseased ganglion and the trachea or bronchi, should be considered as very advantageous ; that is, when there is simple ganglionitis, after which the gland is transformed into a single and immense purulent focus, of which we have already given instances. In this case, when once the pus is evacuated through the air-passages, it has no longer any tendency to be reproduced as tuberculous matter has ; the cavity which it has left behind must become effaced, and at the same time the cicatrisation of the tracheal fistula must take place, as being no longer kept up by the presence of the foreign body, as we may consider the pus to be which flowed from the ganglion*.

---

* "The symptoms which indicate the presence of tuberculous disease in the bronchial glands are generally for some time obscure ; hence these organs may be tuberculous to a considerable extent without this being detected, as it is not until they acquire a considerable size, and irritate the bronchi mechanically, that the local symptoms become evident. The child coughs, and is very liable to catarrh, and occasionally it points to the upper part of the chest as the seat of irritation. But the same symptoms may be produced by common catarrh or pulmonary tubercles to an equal degree. When the diseased state of these glands is further advanced, the nature of the case is more easily detected. When there is cough, hectic fever, and emaciation in a child, and when a careful examination neither discovers tuberculous disease in the lungs, nor in the mesenteric glands, we may feel tolerably certain of its existence in the bronchial glands. In some cases these glands are so much enlarged, as to fill up a great portion of the posterior mediastinum, and even to produce a swelling by the side of the trachea, which is visible externally : but this is rare. If the child is old enough to expectorate, and tuberculous matter is brought up, while we can discover no cavity in the lungs, the diagnosis is almost certain.

"Tuberculous disease, however, does not, in general, remain long isolated in the bronchial

CASE 14.—*Tubercles of the bronchial ganglions — Lungs healthy — Chronic peritonitis.*

A boy, fifteen years of age, had always enjoyed tolerably good health ; he was, however, liable to catch cold, oftentimes had diarrhœa and frequent epistaxis. During the months of April and May, he had regularly every night a febrile attack, which commenced with shivering and terminated by a profuse sweat. During this time the attacks of epistaxis were frequent, and eight days did not elapse without the patient having diarrhœa. At the commencement of the month of June, the febrile accessions became more unfrequent and erratic, but at this period also the abdomen became the seat of abdominal pains, at first intermittent, then continued, and which became more severe every evening. They were not perceptibly increased by pressure ; they were mitigated after alvine evacuations. The patient had from five to six stools in twenty-four hours. These pains continued to the end of the month of June : no active treatment was opposed to them ; the patient continued to take his usual food ; the diarrhœa became permanent ; by degrees the pains ceased, but the abdomen began to become tumefied ; in the course of the month of July it was of an enormous size ; the parts around the ankles also became œdematous. Up to this period the patient kept his bed only temporarily ; he entered the La Charité towards the end of July.

His face and limbs were then very much emaciated. Fluctuation of the abdomen evident ; it was also considerably swollen ; the cellular tissue of the lower part of each leg was infiltrated with a little serum. Strong pressure on the abdomen occasioned no pain. The larynx was a little red towards the summit ; great thirst ; appetite nearly gone ; ten watery stools, without colicky pains, took place in twenty-four hours. The breathing was embarrassed, arising probably from pressure on the diaphragm. Slight frequency of the pulse, without heat of skin. Urine scanty ; cough without expectoration ; the chest, when percussed, sounded well in every part ; the air appeared to enter the lungs freely. Pulsations of the heart natural.

From this collection of symptoms, the ascites seemed to us to have been the product of a slowly developed inflammation of the peritoneum.

The patient took a diuretic mixture, and his thighs were rubbed night and morning with an ounce of the tincture of digitalis.

---

glands ; other organs, especially the lungs, become tuberculous, and the symptoms are then of course complicated. Still there are some cases in which the disease proves fatal while confined to these glands . . . . . . It is not quite a matter of indifference whether the seat of the tuberculous disease be the bronchial glands or the lungs. In the former situation the progress of the disease is slower, continuing in some cases for years, during which the little patient may enjoy pretty good health. The disease being seated in organs much less essential to life than the lungs, interferes less with the general functions of health, and gives time for the application of remedies which its situation in the lungs does not allow. In this respect it resembles a similar affection of the external glands, and like it also is susceptible of cure.

"The termination of this disease is various. That the tuberculous state of the bronchial glands may be removed by absorption, as we see occur in the lymphatic glands of the neck, we have every reason to believe ; but this is probably the less frequent termination. Another mode of cure is that by which the softened tuberculous gland empties itself into the bronchial tube with which it is in contact, by ulcerative absorption of the walls of the tube, as is shown in Dr. Carswell's beautiful plates. The matter being evacuated, the cavity in which it was contained gradually contracts till it is obliterated ; and the cure, as far as this gland is concerned, is complete. The less frequent cure is that in which a portion of the gland, or rather of the tuberculous matter, remains in a cretaceous form. The prognosis of this form of phthisis must always be doubtful, inasmuch as it depends on a circumstance which we are unable to ascertain, namely, the extent to which the bronchial glands are diseased, and on the complications which so often accompany this affection. The prognosis, however, will be more favourable than when the disease exists in the lungs." (Dr. Clark, in the Cyclopædia of Practical Medicine.)—TRANS.

During the month of August he became still weaker, without presenting any other change; profuse diarrhœa continued till death; about fifteen or twenty hours before he expired, the abdomen became diminished in size, and this sudden absorption of the serum we looked on as a signal of approaching death.

Post mortem twenty hours after death. Marasmus very great; belly diminished in size; slight œdema around the ankles.

Nothing remarkable in the brain.

Heart and lungs perfectly healthy; tuberculous degenerescence of the bronchial glands, which were united together like beads at the root of each lung.

In the abdomen we found about two glasses of perfectly limpid serum.

The intestines were connected together into one single mass by false membranes, which were reduced for the most part into cellular tissue. No tubercle found in this part.

The digestive tube, which was opened through its entire extent, was remarkably pale in every part except in the cæcum, where three or four red patches were observed.

This case presents a rare instance of the existence of tuberculous matter in the bronchial ganglions, the pulmonary parenchyma being entirely free from them; nor was this affection marked by any symptom which could excite suspicion of its presence. The obstinacy of the cough was, on the contrary, a motive for thinking that the pulmonary tissue was tuberculated.

ARTICLE II.

DISEASES WHICH COMPLICATE PULMONARY TUBERCLES, AND WHICH HAVE THEIR SEAT WITHOUT THE RESPIRATORY ORGANS.

SECTION I.

DISEASES OF THE HEART AND ITS APPENDAGES.

Among these diseases some are a common complication of phthisis, and form an essential part of its history; others are observed only in a manner accidentally, and we shall refer to them only as far as they shall present some rare cases of pathological anatomy or of symptomatology.

In about one-third of the persons who die of pulmonary phthisis, the heart is found to be in its normal state; in the other two thirds it is changed, but sometimes this change consists in a real or apparent increase in its size; sometimes it is smaller than natural, whilst its parietes are perceptibly increased in thickness (internal hypertrophy); sometimes, in fine, the heart is really atrophied, that is, its size is smaller than natural, and its parietes are attenuated.

100. The increase in the heart's size most frequently consists in dilatation of the right cavities, with or without hypertrophy of their parietes. It seems to depend on the obstacle which the blood experiences in freely traversing the vascular apparatus of the lung, which is frequently obliterated to a certain extent, as we have already endeavoured to show. It is thus that a too narrow aorta seems to have been sometimes the cause of certain hypertrophies of the left ventricle. When aneurism of the right side of the heart exists in only a slight degree, it is announced during life by symptoms not very marked, and its exist-

ence may be recognised by auscultation. When this aneurism is more considerable, more striking symptoms render its diagnosis easy ; we should not, however, forget to observe that, in a certain number of phthisical patients, the great extent of the heart's pulsations does not indicate a morbid state of this organ, but that it results solely from the induration which the pulmonary parenchyma has undergone. It is by this latter circumstance that we can often explain why the pulsations of the heart have been heard with force under either clavicle, or even in the back, in persons whose heart was found to be healthy after death.

Some authors have considered the infiltration of the lower extremities, observed in several phthisical patients, as a symptom depending on the presence of tubercles in the lung ; some make this infiltration to depend on mere debility, whilst others refer it to the embarrassment of the pulmonary circulation ; our own observation has led us to the following conclusion : in phthisical patients, in whom the right cavities of the heart are neither hypertrophied nor dilated, in whom the aortic orifice is free, and in whom also there exists no mechanical obstacle to the venous circulation in any other point, the subcutaneous cellular tissue, and particularly that of the lower extremities, constantly remains very dry ; a little œdema around the ankles is the only trace of infiltration observed, and even this partial œdema is very rare. In the phthisical patients, on the contrary, whose lower extremities are infiltrated to a degree however inconsiderable, whether this infiltration extends or not to the rest of the subcutaneous or intermuscular cellular tissue, as well as to the different serous membranes, we find, in the majority of cases, as the cause of the dropsy, an organic disease of the heart, or some other obstacle to the venous circulation, such as obliteration of some venous trunk, affection of the liver, etc.

The puffiness of the face, the purple colour of the lips, the inability to lie in the horizontal position, are likewise so many symptoms which often coincide with pulmonary phthisis, but which do not depend on it ; they announce an aneurismatic state of the central organ of the circulation *. In several phthisical patients, for instance, we have observed such suffocation, that they were obliged to remain continually sitting up in bed ; others, in order to breathe more freely, and to lessen the state of anxiety which oppressed them, spent the night sitting in a chair : every time we observed these symptoms, the existence of a disease of the heart, and in particular of a dilatation of its right cavities, accounted for the phenomena. We agree, however, that this state is most frequently consecutive on the pulmonary affection ; but what seems to us very evident is that the phenomena now mentioned are not produced as long as the lung alone is diseased.

101. The internal hypertrophy of the left ventricle, with diminution of the size of the heart, does not occasion any peculiar phenomena in phthisical patients ; the same may be said of the real atrophy which this organ undergoes in other phthisical patients. This atrophy, viewed with respect to its cause, is very easily accounted for : it is, in fact, natural to suppose that the heart participates in the diminution of size, which the muscles of animal life undergo in so striking a manner in pulmonary phthisis ; this is the necessary consequence of the incomplete hematosis which must take place—which must occur, when the lungs, more or less seriously disorganised, cease to admit the air into a part of their vesicles. It would be important to know why, in four individuals, whose respiratory apparatus seems placed in the same circumstances, in the one the heart does not deviate from its normal state ; in the second it is hypertrophied and dilated either in its entire extent, or in one of its cavities ; in the third it presents mere increase of nutrition in the parietes of the left ventricle, with diminution of its cavity ; and finally, in the fourth it undergoes real hypertrophy.

---

* We give the name of aneurism only to those diseases of the heart where there is an increase in the size of this organ.

SECTION II.

DISEASES OF THE DIGESTIVE TUBE.

102. Of all the organs the digestive tube is certainly that which, next to the lungs, presents in phthisical patients the most common lesions and those most important to be well understood. Can we account for this almost constant coincidence of pulmonary tubercles with different alterations of the gastro-intestinal mucous membrane? Probably we might here make application of the law in virtue of which the affection of a tissue tends rather to be reproduced in the other parts of the same tissue than in other points of the system. Thus, in the acute state, in the diseases called continued fevers, the inflammation, congestion, or irritation which exists in the gastro-intestinal mucous membrane, usually extends to the air-passages, whether limiting itself to the great bronchial ramifications it constitutes a simple catarrh, or attacking the pulmonary vesicles, it is changed into a pneumonia. In the chronic state we may again observe this same simultaneous existence of disease; we may see a chronic inflammation of the bronchi and intestines either alternate, or exist at one and the same time, in the same individual. Most of the patients who, before presenting evident signs of pulmonary tubercles, have had frequent catarrhs, have been also subject to frequent diarrhœas. Now it is satisfactorily proved that the latter are then but the mere result of an enteritis or colitis more or less severe. Is not this again one of those facts which might be adduced to prove that, in the lung as in the intestine, tubercles are developed and appear only consecutively to the irritation of the mucous membrane, an irritation which, according to the predisposition of the individuals, requires different degrees of intensity and duration to produce tubercles?

The alterations of the digestive tube in phthisical patients are particularly remarkable in the infra-diaphragmatic portion of this tube: we shall study them, 1st, in the stomach; 2ndly, in the small and large intestines.

103. The frequency of the affections of the stomach may be proved in phthisical patients both by the examination of the symptoms, and by the autopsy.

The result of our own observations is, that in at least three-fifths of the persons who died of phthisis in the La Charité, in the wards of M. Lerminier, we found after death a well-marked morbid state of the stomach.

This viscus presented in phthisical patients the following lesions:—

1st. In some cases, considerable injection of the mucous membrane, most frequently existing towards the great cul de sac, without perceptible change of consistence or thickness, or any appreciable alteration of the subjacent tissues. This injection, which had its seat exclusively in the capillary system of the gastric mucous membrane, without the veins of a larger calibre which pass over the subjacent cellular tissue having been gorged with blood, could not be confounded with a mere mechanical injection, the result of impeded circulation; it was a real inflammatory injection. This injection was either arborescent or dotted, or sufficiently intense to constitute by the aggregation of a great quantity of capillaries filled with blood red patches more or less extensive.

2ndly. In other cases the mucous membrane was no longer red; but it presented a brown or slate-coloured grey tint; at the same time it retained its ordinary thickness, and usual consistence, or else it was thickened and indurated.

3rdly. At other times, and much more frequently, we have found this same membrane softened in different degrees, whether it was at the same time red, or, whilst being softened, and reduced to a pulp, it still presented a more or less perfect whiteness.

4thly. We have but rarely found in phthisical patients ulcerations of the mucous membrane of the stomach.

5thly. We have seldom detected in them the existence of any change in the tissues subjacent to the mucous membrane. Sometimes, however, the laminated (lamineuse) membrane appeared indurated, the muscular membrane hypertrophied, and in two cases only out of several hundred, we have seen the gastric mucous membrane raised by tubercles. In these two particular cases, there were around these tubercles unquestionable traces of inflammation: redness and puffiness of the mucous membrane in one case, ulceration of this membrane in the other.

6thly. There are causes where the parietes of the stomach of phthisical patients exhibited extreme attenuation, without their presenting any of the ordinary anatomical characters of inflammation. The inner surface of the stomach was remarkably pale. The mucous membrane appeared in the form of a very thin pellicle; the fleshy tunic itself consisted only of some fine, colourless fibres, which appeared confounded with the cellular tissue interposed between the mucous membrane and the peritonæum. Sometimes the attenuation of the different fibres was such, that in several points the parietes of the stomach seemed to be formed merely of peritoneum, which appeared to be separated solely by a very fine cellular web from the matters taken into the stomach. In this state of attenuation the parietes of the stomach were sometimes so soft that they were torn by the slightest efforts; at other times they presented sufficient resistance and seemed much less softened than in other cases where these same parietes had not diminished in thickness in so remarkable a manner. This proves that the attenuation of the gastric parietes and their softening are two phenomena, which, though often united, may, however, exist independently of each other.

Among these different lesions which the stomach of phthisical patients presents, there are some which we think cannot be referred to inflammation or irritation; there are others in the nature of which medical men are not agreed, but which, according to us, should be referred to an inflammatory state. Finally, there are several of these lesions which are considered, by unanimous consent, as the result of inflammation.

We shall not dwell on these last, since there can be no dispute with respect to them. Among those of the second class is found the red or white softening of the gastric mucous membrane. Is this softening, in a great number of cases, a sign of an inflammatory state of the stomach? To prove that gastritis is a common affection in phthisical patients, it is necessary that the question just proposed should be answered in the affirmative; for softening of the gastric mucous membrane, is in these patients the most common lesion presented by the stomach. We shall not then be wandering from our subject in devoting some pages to the solution of this question, which has been left undecided by M. Louis, in his excellent essay on softening of the mucous membrane of the stomach. But first let us observe that three principal degrees may be admitted in this softening; namely, a first degree, in which the membrane, though having lost its natural consistence, being no longer capable of being detached in shreds, and being reduced to a pulp by slight scraping, retains, however, a solid form before being scraped. In the second degree we find over a certain extent of the stomach, in place of the mucus membrane, only a sort of white, grey, or reddish pulp, which might be taken for mere mucus laid over the cellular tunic. Finally, in a third degree, this sort of pulp or semi-liquid substance, which took the place of the mucous membrane, has disappeared, and the submucous cellular tissue is exposed, either in some detached points only, or over a vast extent. One of the most remarkable examples which we have had an opportunity of observing is the following.

CASE 15.—*Almost complete destruction of the entire mucous membrane of the stomach in a phthisical patient.*

A man, thirty-five years of age, died of phthisis in the hospital. During the three months which he passed in the hospital, he never vomited; but he constantly complained of a total failure of his appetite, an habitual sense of constriction toward the epigastrium, which was changed into a real pain when any simple food or even simple drinks were introduced into the stomach: drinking wine produced nausea, and in particular a marked *burning* sensation, which commencing from the cardiac orifice, extended in the course of the œsophagus as far as the upper part of the pharynx. At the post mortem, the mucous membrane of the stomach was found in the form of mere debris. From the cardia to the pylorus the submucous cellular tissue was laid bare, having retained its natural whiteness, and appearing only a little thickened. In some points, however, there were still perceived some remains of the mucous membrane, which were recognised by the reddish white tint, and by the slight projection of the detached patches. Tubercles were also found in the lungs, and ulcerations in the intestine.

104. The inflammatory nature of a great many softenings of the gastric mucous membrane may be proved by the examination of the anatomical characters of these softenings, of the symptoms which they occasion, of the causes which often give rise to them, and of the treatment most successfully opposed to them.

105. The anatomical characters prove to us, that in the majority of cases where the gastric mucous membrane is softened, this softening is accompanied by other changes which indicate a state of inflammation. Thus, most frequently, the softened mucous membrane presents a red colour, either uniformly spread over its surface, or scattered in the form of mere points, patches, or spots of variable extent. Over the submucous cellular tissue veins pass evidently dilated, as if varicose, such as they are found where a more or less inveterate inflammatory process exists, as, for instance, around old cutaneous ulcers, as around cancerous degenerescences of the breasts, etc. It would, however, be contrary to observation to admit that this as it were varicose state of the submucous veins of the stomach is in all cases the index of an inflammatory state. Oftentimes have we found a similar dilatation of the veins on the inner surface of the skin, and particularly of the hairy scalp. These veins, distended with black blood, presented an appearance precisely similar to that of the gastric veins now mentioned. Now it was very evident that this dilatation of the subcutaneous veins could not be referred to inflammation, and that it arose solely from the mechanical stagnation of the blood in the venous system. But the one of these phenomena does not exclude the other, and we may conceive that, according to the cases, the venous dilatation may depend either on inflammation *, or on passive congestion.

If we trace this same softening through other organs, whether membranous, or parenchymatous, we shall find it connected most frequently with other anatomical characters of inflammation †. Thus the inflamed cellular tissue, at the same time that it is red and filled with pus, becomes soft and friable. M. Dupuytren long since remarked the great friability acquired by the cellular tunic of arteries when attacked with inflammation. Serous tissues when inflamed also become very friable. Examine the cutaneous tissue where a pustule of small-pox exists ; you will often find it, either merely at its surface, or through its entire substance, so softened, that at this part the skin gives way and is lacerated by the slightest effort. After inflammations of the synovial membranes, either acute, or more especially chronic, who has not observed the ligaments and other fibrous parts surrounding the joint, deprived of their usual consistence, and ultimately constituting a mere pulp ? In these same inflammations the cartilages themselves also sometimes present a pulpy softening, the result of which sooner or later is their complete destruction, or a denuded state of the bone. Brought into contact with pus, the periosteum is at first thickened, then softened and destroyed. The softening of the transparent cornea is observed after intense inflammation of the conjunctiva. In parenchymatous tissues one of the first effects of inflammation is also to diminish their cohesion in a perceptible manner. Thus we can now no longer doubt that softening of the brain is the result of encephalitis, at least, in the great majority of cases ; thus certain degrees of inflammation of the pulmonary parenchyma are marked by such a diminution of its consistence, that this parenchyma may be scraped and reduced to a pulp by the slightest pressure ; thus in some cases, where during life the nature of the symptoms induced us to suspect the existence of hepatitis, we have found after death the tissue of the liver remarkable for its extreme softness.

---

* Not only may dilatation of the veins supervene consecutively to inflammation of the parts from which they convey blood, but it may even result directly from an inflammation of their own parietes. Such is the opinion lately expressed by M. Ribes. In an excellent *Article on Phlebitis* (Révue Médicale, July 1825,) he expresses himself thus: *Sometimes the vein, slightly inflamed, becomes dilated and distended with blood.*

† M. Lallemand may justly claim the merit of having pointed out the influence which inflammation exercises over the softening of organs.

But there are cases in which at the same time that the gastric mucous membrane is softened, it retains its usual whiteness, so that from mere inspection one might suppose that it was perfectly healthy. Should this white softening of the stomach also be considered as a result of inflammation ? Here the question becomes more delicate. It should be remarked, however, that in several parts we cannot deny the existence of inflammation, though these parts may not be red. Such is the case of the serous membranes which secrete pus, and which, however, most frequently retain their natural colour ; they do not become red, but they are softened. It will not be denied, no doubt, that the induration of the cellular tissue around old ulcers is an inflammatory product. And the cellular tissue, thus indurated, often presents a perfectly white appearance. The softening of the transparent cornea, succeeding an acute or chronic ophthalmia, is often neither preceded nor followed by redness. It does not appear, then, that we can argue from the mere whiteness of certain softenings of the gastric mucous membrane to prove that these softenings are not a result of inflammation. We cannot arrive at this negative conclusion but by bringing together several kinds of proofs.

From these facts it follows, that directing our attention merely to the lights afforded by anatomy, we should consider the softening of the mucous membrane of the stomach as connected with a state of inflammation. Let us see whether the examination of the symptoms will lead us to the same conclusion.

106. First, there is a certain number of cases in which the symptoms observed in an individual whose gastric mucous membrane is found softened after death, evidently announced an inflammation of the stomach, a circumstance which takes place particularly when the disease has been acute. When, on the contrary, it has assumed but a chronic course, two cases may present themselves :—1st. There may still be observed symptoms, more or less marked, connected with the stomach, such as pain of the epigastrium, increased by taking in meat and drink, vomiting more or less frequent, etc. Now these symptoms are precisely those which are observed in cases where the autopsy discovers unquestionable traces of gastritis, such as thickening, puffiness, vegetations, ulcerations of the mucous membrane. 2ndly. One may find this same membrane considerably softened, though during life there may have been observed but very obscure signs of gastritis. Thus the patients do not vomit ; they even retain considerable appetite; they have no pain ; their thirst is not increased, the circulation is not disturbed ; they merely complain of more or less painful digestion, and waste away. But it is not only in the cases of simple softening of the mucous membrane that this absence of symptoms is

observed: this membrane may be the seat of extensive ulcerations, of large fungous tumours, of the most varied degenerescences, without its remarkable lesions being announced by any other symptoms than those a little before mentioned, namely, laborious digestion, without any other local symptom, and a general alteration of nutrition properly so called. It must then either be admitted that these different lesions are sometimes the result of an inflammation, and sometimes do not depend on it, or acknowledge that the softening of the gastric mucous membrane is not less an inflammation, though it exists almost without symptoms. Now, of these two propositions the second is the only one admissible. We shall acknowledge then, that there may exist cases of gastritis, with softening of the mucous membrane, without any marked symptom, in the same way as there exist cases of pneumonia without dyspnœa and without rusty sputa, pleuritis or peritonitis without pain, etc.

Thus attention to the symptoms, as well as to the anatomical characters, tends to prove that softening of the gastric mucous membrane is the result of an inflammatory process.

107. If we now consider the nature of the causes which in a great many cases have acted in producing this softening, we shall see that these causes enter the class of irritants. Thus, in animals, the introduction of corrosive or acrid poisons into the stomach frequently occasions softening of the mucous membrane of this organ. We have found this softening carried to a high degree, extended to all the tunics of the stomach, which were torn, and reduced to a pulp by very slight force, in an infant to which, several months before, sulphuret of potass had been given. Since the administration of this substance it had had vomiting, and had fallen into a state of marasmus. We have often had the opportunity of opening, at the La Charité, the bodies of persons who had been addicted to ardent spirits, and one of the most frequent lesions which their stomach presented was red or white softening of the mucous membrane. The *jelly-like* softening, as it is called, of the stomach, so well described by M. Cruveilhier, came on, according to the account of this learned observer, in children who were weaned, and *gorged* with coarse indigestible food. It is evident that, in this way, the irritable stomach of these children was placed in the condition most favourable for the development of gastric inflammation. In the other organs we may also see softening produced under the influence of manifest causes of irritation. Thus, after blows or falls on the cranium, the brain becomes inflamed; *it is softened.* Thus, when foreign bodies are introduced and remain in the midst of a parenchyma, when accidental tissues are developed in it, this parenchyma, irritated by their presence, becomes inflamed around them; *it is softened.* This, for example, is frequently observed in the brain of children around tubercles.

To be sure, many softenings of the stomach or of other organs occur without any cause of irritation appearing to concur in their production. But if these softenings present the same anatomical characters, and the same symptoms as those developed in consequence of a manifest irritating cause, must we not hence conclude that the first are of the same nature as the second? Would we be warranted in admitting an inflammatory arachnitis, and an arachnitis not inflammatory, because in one case the inflammation is developed under the influence of an evident cause of irritation, such as a coup de soleil, etc., whilst in the second no cause of this kind seems to have acted?

Again, it has been objected that a considerable number of softenings of the stomach, or of the brain, are produced, either in persons advanced in years, or in individuals who, plunged into a greater or less state of debility, appear placed in conditions not favourable to the development of inflammatory affections. But, thanks to the progress of pathological anatomy, we now know that inflammation equally manifests itself in young or old, robust or debilitated persons. Only in these different conditions the local inflammation announces itself by another set of general symptoms. Thus, for instance, in a young plethoric irritable individual of great nervous susceptibility, a very circumscribed softening of the gastric mucous membrane will be capable of producing intense general reaction ; whence violent fever, delirium, convulsions, total interruption of all the functions, and speedy death. In other individuals, placed in opposite conditions, this softening may arise and extend without producing any other symptom than slight disturbance of the digestive functions ; and whilst in the former the disease will be fatal in the space of a few days, in the second, on the contrary, it will be from its origin essentially chronic, and may continue for several years. It is in this way also we may explain why softening of the brain presents itself in general with the predominance of spasmodic movements in the young man, and of simple paralysis in the old man.

Shall we now endeavour to determine the nature of the softening of the gastric mucous membrane from the mode of action of the different therapeutic agents ? We shall find that tonics or stimulants applied to a softened membrane aggravate the case, and often render temporarily manifest a gastritis which till then was announced only by very obscure symptoms. On the contrary, the antiphlogistic system appears most suitable.

Thus, to sum up, the anatomical characters of softening of the mucous membrane of the stomach, the symptoms which mark its existence, the causes under whose influence we often see it developed, the mode of treatment by which it is most successfully combated, all concur in demonstrating the inflammatory nature of this softening.

From all that precedes we shall deduce then this important consequence, namely, that more than half the phthisical patients, of those at least who die in hospitals, are at the same time affected with inflammation of the stomach. This inflammation presents perceptible varieties with respect to its symptoms, its progress, the dangers which it may threaten, or the influence which it may exercise on the principal disease. Let us consider these varieties.

108. The gastritis which accompanies pulmonary phthisis may present itself in an acute or chronic form. The second form is more frequently observed than the first.

109. There are some cases of pulmonary phthisis whose commencement is marked by an acute inflammation of the stomach. In the midst of the most perfect state of health, individuals feel a pain in the epigastrium more or less severe; they have nausea, vomiting ; their tongue is red and dry ; they are devoured by a burning thirst ; at the same time they cough, and present the symptoms of simple bronchitis, which seems to engage the attention much less than the inflammation of the stomach. But at the end of a longer or shorter time, and when the symptoms of the gastritis are already perceptibly amended, the cough continues ; hemoptysis supervenes ; dyspnœa manifests itself ; and, finally, everything announces a tuberculated state of the lungs.

Among the cases of this kind which have come under our observation, we shall always remember that of an individual who entered the hospital with all the symptoms of a well-marked gastro-intestinal inflammation. He was strong, plethoric, and never had had in his life any other affection except some slight colds. Fifteen days after his admission, the abdominal symptoms had in a great measure disappeared, but the patient had a very severe cough, resembling that which appears at the commencement of measles. No fever ; breathing free. The respiratory murmur was heard distinct, except in several points, where it was obscured by some bronchial râle. Some days later a profuse hemoptysis appeared, and continued for about forty-eight hours ; from that time rapid emaciation came on ; six weeks after his admission caverns were manifest in the summit of the lung ; and, at the end of two months, death in the last stage of phthisis. Tubercular cavities were found in the lungs, and also the gastric mucous membrane was red and reduced to a pulp towards the great cul de sac. (The appetite had never returned; the epigastrium always remained sensible to pressure.) In this case, what at first was but a secondary affection became the principal disease: the inflammation of the stomach was mitigated, but did not leave the patient; the bronchitis, on the contrary, became worse and worse; and here no one will refuse to admit that it was the very origin (point de depart) of the development of the tubercles, unless persons prefer to suppose that these tubercles, till then latent, by reason of their crudity and small number, began to multiply and soften a little time after the attack of gastritis. But even on this latter hypothesis these tubercles manifested their presence only subsequently to the inflammation of the stomach. Few cases of phthisis are observed to assume so acute a course as that now referred to.

110. In the above cases the gastritis preceded the attack of phthisis; it was probably the primary cause of it by the sympathetic irritation which it exercised on the lung. Let us now turn our attention to other cases in which tubercles having already manifested their existence in the pulmonary parenchyma, but the phthisis being as yet only in the first stage, an acute inflammation of the stomach was subsequently developed. Let us consider these symptoms, and note particularly the influence which it may exercise on the affection of the lung.

During the first period of phthisis, it sometimes happens that the tongue is red and dry; at the same time the appetite is lost, the taking of food gives rise to a painful sensation in the epigastrium; the fever, either none, or but inconsiderable till then, becomes continued and intense. The cause of this new group of morbid phenomena appears such as should be referred to a state of acute irritation of the stomach; but this cause may be readily overlooked, because, on the one hand, the local symptoms are often but little marked, and on the other hand, at the same time that the stomach is inflamed, we most usually perceive the affection of the lung become evidently aggravated; the cough becomes more frequent and more painful; the sputa were tinged with blood; the oppression is increased. The gastritis seems to exercise in this case a sympathetic irritation on the lung. We find here, moreover, the particular application of a general law, in virtue of which, every time that an inflammation manifests itself in an individual in whom an organ is already diseased, it is principally on the latter that the sympathies are exercised, unless a revulsion can be brought about by the new inflammation which is set up. Now, I possess no fact which proves that this kind of revulsion has been sometimes produced by an acute gastritis coming on during the first period of pulmonary phthisis. At a more advanced period, on the contrary, as we shall presently see, this revulsion is not very uncommon; there are patients in whom we can very well appreciate the sympathetic influence which the development of a gastritis exercises on the symptoms and progress of commencing phthisis.

A young girl had retained, after a profuse spitting of blood, a dry cough and a little oppression; she gradually lost flesh; she had no fever, had still some appetite, and attended to her usual occupations. There was reason for dreading in her case the existence of pulmonary tubercles, but nothing afforded any certainty of them. One day this patient felt a pain in the epigastrium; she was attacked with vomiting; the tongue became red; fever was lighted up. The second day of the attack of this gastritis the cough became more intense, and the patient, very much oppressed, spit a considerable quantity of blood. Under the influence of proper treatment the symptoms of gastritis disappeared, and at the same time that they improved the hemoptysis ceased, the cough became lighter, and the patient returned to the same state in which she was before the attack of gastritis. Two months after the latter again reappeared, accompanied by the same symptoms; a little time after the hemoptysis again manifested itself. The gastritis again terminated favourably, and with it the spitting of blood was observed to disappear, the pulmonary tubercles again seemed to remain stationary. Lastly, at the end of some months, new symptoms of inflammation of the stomach developed themselves for the third time, and, as before, the spitting of blood reappeared with marked exacerbation of all the symptoms of the thoracic affection. The gastritis promptly disappeared; but this time the symptoms appertaining to the chest, far from improving, became more and more severe, and the patient was soon brought to the last stage of pulmonary consumption and died.

From these facts we shall draw the conclusion that acute gastritis which supervenes, as a complication, in the first period of pulmonary phthisis, may exercise the most mischievous influence in the progress of the latter; an active treatment is then necessary, and it is by powerful antiphlogistics that we must combat, from their commencement, those inter-current inflammations, however mild the symptoms may otherwise seem to be. It is in cases of this kind, that we have seen the application of leeches to the epigastrium, put an end to profuse hemoptysis more certainly and more promptly than venesection could have done.

111. In the other stages of phthisis, from that where tubercles (as yet but few in number) begin to be softened, to that wherein vast cavities are formed in the pulmonary parenchyma, acute inflammation of the stomach becomes a more frequent complication than in the first stage. It is announced by the same symptoms, and most frequently also it produces a marked exasperation in the symptoms of phthisis. However, this exasperation does not always take place, and in this respect one might range in three classes those phthisical patients who, at a more advanced stage of their disease, are attacked with acute gastritis. In some this gastritis appears to exercise no influence on the pulmonary affections; in others, as we have just said, it exasperates it in a very striking manner. It may, for instance, impress a really acute character on a case of phthisis which, till then, progressed but very slowly. Thence the necessity of not confining ourselves to an expectant mode of treatment, and of meeting this gastric inflammation by antiphlogistics, though it may affect individuals already labouring under a chronic disease. Finally, in other phthisical patients, at the same time that the stomach is inflamed, the primary disease seems to retrograde; the cough becomes rarer; the sputa are less copious, and of a less unfavourable appearance; the breathing itself seems freer; the colliquative sweats are suspended, or at least diminished. It would seem that in this latter case, a real revulsion takes place of the lungs on the stomach. Thus in several phthisical patients, we perceive the diarrhœa and the expectoration alternate in a very striking manner, so that the latter becomes more profuse when the former ceases, and *vice versâ*. I have observed this diminution of the symptoms of phthisis after an attack of gastritis, only when the latter was sufficiently intense to cause the patient's death. The acute inflammation of the stomach is in fact the cause of the premature death of a certain number of phthisical patients.

112. But acute gastritis, though occurring in phthisical patients more frequently than was for a long time thought, is still much less common in them than chronic gastritis. The latter may succeed an acute inflammation, but it is more frequently chronic from its commencement. Uncommon in the first stage of phthisis, it is principally when there is softening of tubercles or formation of cavities that it is seen to appear. This affection is marked in a certain number of cases by signs sufficiently characteristic readily to establish its diagnosis; but at other times it is announced by symptoms so little marked that it may be readily overlooked. Let us consider these different shades.

The first phenomenon which oftentimes in phthisical patients reveals the existence of chronic gastritis, is a remarkable susceptibility of the stomach. As long as such patients do not exceed the strict regimen which is prescribed to them, nothing indicates an irritation of the stomach in them: they digest tolerably well the little food that is allowed them; but should they eat either a greater quantity of food, or such as is of a more irritating quality, their stomachic digestion becomes painful and laborious. The introduction of a few spoonsful of wine into the stomach is followed by a sensation of heat, or of real pain in the epigastric region; the tongue becomes red; vomiting supervenes. These same symptoms are reproduced, if, for the simple demulcent ptisans hitherto employed, there be substituted bitter drinks, such as the different preparations of lichen or quinquina. Again diminish the quantity of food, cease the use of wine, suppress the employment of bitters, the gastric symptoms disappear. In cases of this kind, where nothing else was observed with respect to the stomach than this mere susceptibility which was aroused by every kind of irritant, I found the gastric mucous membrane in a state of evident inflammation (red dotted colouring, with marked softening). Thus, then, in phthisical patients, we shall not always consider as a nervous phenomenon, that great sensibility of the stomach; apprised of its real cause, we shall employ but rarely, and very cautiously, the different tonic and anti-spasmodic substances, so unsparingly used for a long time; it is particularly by an anti-phlogistic treatment we shall endeavour to combat it.

In other phthisical patients, it is no longer in an intermittent form, and when the stomach has been accidentally stimulated, as in the case referred to, that the disturbance of the functions of this organ manifests itself; we often observe the most complete dislike for every species of food, so that an invincible loathing prevents the patients from taking any nourishment; that is the only morbid phenomenon which indicates a lesion of the stomach. But if any irritating substance be administered, then symptoms of gastritis appear, the epigastrium becomes painful, vomiting takes place, &c. In a word, after taking in an irritant into the stomach, we see the same phenomena manifest themselves as those described in the preceding paragraph; but still further, there is here, during the absence of irritants, a morbid phenomenon very important to be noted, namely, a total, absolute disrelish for every species of food. Is this phenomenon sufficient to indicate the existence of a chronic gastritis? I think, at least, that if it is not necessarily connected with it, and if it may exist without there really being inflammation, it certainly oftentimes depends on the latter; for, on the one hand, it is oftentimes found connected with great sensibility of the stomach, with an irritability altogether peculiar; whence result manifest symptoms of gastritis, as soon as an irritant is introduced into the stomach; on the other hand, in a great number of phthisical patients who, during life, presented no other morbid phenomena with respect to the stomach, except that total dislike to food now in question, I found unequivocal traces of chronic inflammation of the mucous membrane, most frequently consisting of red, grey, or white softening of this membrane. If, notwithstanding the reasons above adduced, it be objected that this softening is not the result of inflammation, I answer that this total aversion to food has been equally the sole morbid phenomenon which indicated a lesion of the digestive functions in several other patients, in whose stomach ulcerations were found, accompanied with thickening, induration, degenerescence of the mucous membrane around these solutions of continuity. Now, in this latter case, who will question the existence of an inflammation? We must not here confound, with respect to semeiology, the total and permanent dislike to every kind of food, which I here allude to, with the mere diminution of appetite observed in almost all acute or chronic diseases, without, however, there being any inflammation of the stomach. Oftentimes, then, the anorexia seems to depend either on mere disturbance of the nervous system, or on a greater or less alteration of the phenomena of nutrition.

Finally, there are other cases where symptoms less obscure announce, in phthisical patients, the complication of a chronic inflammation of the stomach; and here, again, several degrees must be laid down. Thus in a certain number of patients, besides the complete disgust for food, the introduction of the latter into the stomach will be followed by a sense of weight, of heat, or even of real pain in the epigastrium; pressure will be painful: yet there will not be observed either thirst, vomiting, or redness of the tongue.

In other phthisical patients, where there may be or not, pain in the epigastrium, the tongue which, in the preceding stages, had retained its natural appearance, begins to announce an affection of the stomach; however, it seldom presents, as in the cases of acute gastritis, a red uniform colour, with smoothness of surface. But what it presents more prominently is a tumefaction, a sort of permanent erection of its papillæ; sometimes its edges and apex are of a cherry-red, while the rest of its surface is covered by a whitish layer, more or less thick; sometimes, in fine, this whitish layer is, as it were, studded with a number of small points of a bright red colour, an arrangement which, in general, seems to me one of the most certain marks of an inflammatory state of the stomach.

Lastly, to the preceding symptoms there is joined great thirst and nausea, which must not be confounded, with respect to its cause, with that which is excited by cough, vomiting more or less copious, consisting either of bile and mucus, or of the drinks, which sometimes are thrown up as soon as they are introduced into the stomach. These latter varieties of chronic gastritis have a tendency to be confounded by their symptoms with acute gastritis.

Several phthisical patients, though presenting undoubted signs of an inflammation of the stomach, state, however, that they still retain some appetite; they earnestly press for food; but I think that in the great majority of cases, it is but a factitious sensation; these patients are always inclined to attribute the diminution of their strength to the want of food; they confound the feeling of debility which they experience, and which increases incessantly, with the sensation of hunger; but scarcely do they take food, no matter how small a quantity, into their stomach, when a loathing comes on, and in spite of all their efforts they cannot continue to eat, though they feel neither pain in the epigastrium, nor an inclination to vomit, etc., an evident proof that their appetite is not real.

The gastritis which complicates pulmonary phthisis may then, as all other inflammations, present the greatest shades in its symptoms, so that sometimes nothing shall be easier than its diagnosis; and sometimes, on the contrary, more or less latent, it will escape the researches of an inattentive or inexperienced observer. But however different the symptoms may be, the lesion will still always be the same, it will always be inflammation. But I think that in our present state of knowledge, it is not possible to connect such or such a group of the symptoms now pointed out, with such or such a mode of inflammatory lesion of the stomach. Thus, for instance, should the mucous membrane of this organ be softened, indurated, ulcerated, we shall indifferently see the gastritis to be manifest or latent, exist with or without pain, with or without vomiting, etc.

The frequency of gastritis in pulmonary phthisis being well ascertained, we shall thence deduce this important consequence, that it is only with attention and precaution that in the course of phthisis we shall be able to apply substances more or less irritating to the mucous membrane of the stomach. Besides, several cases of gastritis in phthisical patients continue, become worse, and in a manner become domiciliated, because very frequently giving rise only to symptoms not at all alarming, they are actually left to themselves in the great majority of cases.—Probably we might diminish the frequency and danger of this fatal complication, if, from its commencement, we opposed to it a more active treatment: applications of leeches to the epigastrium might be very useful to fulfil this indication, as long as the strength of the patient will allow it. If the debility be already extreme, we may have recourse with great advantage to the employment of different topical revulsives also applied over the epigastrium. In such circumstances, I have more than once seen blisters applied to this region, bring back the appetite, which had been a considerable time lost, or promptly put a stop to obstinate vomiting. On the contrary, I have never seen these symptoms to disappear under the use of substances more or less stimulant when introduced into the stomach. Do we here mean to say, that, in all cases where there is loss of appetite, weight in the epigastrium, nausea, and vomiting, the employment of the latter medicines must be generally prohibited? I do not think so, and I have cited in other parts of this work numerous facts which prove their utility in certain cases. I am satisfied there are morbid states in which tartar emetic, for instance, may remove anorexia, weight in the epigastrium, with much more certainty than could be done by leeches. Nor am I less satisfied that there are cases of vomiting, where bleeding is of no use, and which yield, on the contrary, either to opium, or to different medicines which seem to exercise a specific action on the nervous system. But in pulmonary phthisis the disturbance of the functions of the stomach should, in my opinion, be most frequently referred to an acute, and particularly to a chronic inflammation of this organ, and consequently it should be almost exclusively treated by antiphlogistics. There is a certain number of medicines whose utility in certain stages of pulmonary phthisis is vouched for by experience; such are the different substances called balsamic, several sulphureous waters, different preparations of Iceland moss and Peruvian bark, etc.: but before prescribing these medicines, and during their exhibition, we must carefully inquire into the state of the stomach; for these substances, more or less stimulant, can exercise a favourable influence on the pulmonary disease only as far as the stomach which receives them is entirely exempt from inflammation.

113. Guided by observation, we have laid it down that the functional disturbances of which the stomach of phthisical patients is so often the seat, should be referred, in the great majority of cases, to an inflammation either acute, or particularly chronic, of this organ. But because a phenomenon occurs generally in such a manner, we are not strictly warranted in thence concluding that it must always happen so. There is a certain number of cases in which I am strongly inclined to think that some organic alterations of the stomach of phthisical patients are neither the result of inflammation, properly so called, nor even of any process of irritation or of congestion, which, in reality constitutes but different degrees of one and the same morbid state, which, susceptible of a thousand shades, is connected on the one hand with the physiological state, and on the other hand constitutes the origin of the strangest anomalies of nutrition. To none of these shades do we think we can refer that state of the stomach which we have already said exists in several phthisical patients, and which, we have said, consists in an extreme attenuation, in real atrophy of the different tissues entering into the composition of the parietes of the stomach. Let us here see, whether it is not the diminished nutrition of an organ, a phenomenon analogous to that which, in these same phthisical patients, takes place in other organs, and particularly in the entire muscular system. This diminution of nutrition may also be readily explained by the deficiency, or, if you will, by the lessened activity of the process of sanguefaction. Might this also explain why inflammation itself, when it occurs in phthisical patients, but rarely gives rise to a considerable hypertrophy of the organs which it has attacked? Be that as it may, it would not appear to us more reasonable to attribute this commencement of atrophy in the organs of phthisical patients to inflammation, or any other similar process, than to refer to it either the constant and regular disappearance of several organs at the term of fœtal life, or the anencephalous or acephalous state, or any other mal-formation through defect of development. In this latter case, the primary absence of the vessels which should carry the blood to the organ not developed, seems to be one of the causes of the species of arrest which has taken place in its evolution*. In the second case, the organ diminishes in size or disappears, when at a certain period of existence less blood is conveyed to it. Thus it is, also, that the roots of the milk-teeth become atrophied, according as

---

* Serres.

the artery which carried nutrition to them is obliterated. Who does not see great analogy between these different phenomena, and those of atrophy of the muscles and other tissues, in persons whose lung, filled with pulmonary tubercles, hepatised, etc., now seems but imperfectly fitted to form blood? Is it not an atrophy of this kind which the transparent cornea underwent in the animals to which M. Majendie allowed for aliment nothing but substances incapable of nourishing them*? The adducing of these facts is not devoid of importance at a period when, in consequence of the oftentimes merited favour in which the doctrine of irritation is held, those phenomena are now taken into too secondary account, as we think, which cannot be rationally explained by the latter.

114. The intestinal canal, properly so called, presents in phthisical patients alterations at least as frequent as the stomach, and which in general have been, up to the present, better appreciated and better described. Here our own observations have been in a great measure merely confirmatory of those of Bayle and other observers. However, among these alterations, there are some which do not seem to us to have sufficiently engaged attention, and on which we shall particularly dwell: there are others, intestinal tubercles, for example, whose nature being still an object of discussion, was capable of being illustrated by new facts.

Among the phthisical patients who died in the wards of M. Lerminier during the last six years, one-fifth, at most, presented a perfectly healthy state of the intestinal canal, from the duodenum to the rectum inclusively. We have elsewhere † mentioned what we understood by this healthy state.

The first degree of morbid state observed in the intestinal mucous membrane of phthisical patients, is an alteration of its colour, without any other modification of its physiological qualities. Often, for instance, it presents a tint of a more or less bright red; at other times it is brown, greyish, or slate-coloured; at other times, and this latter appearance is far from being uncommon in phthisical patients, it is studded by an infinite quantity of small, black, elongated points, somewhat like the delicate lines formed by passing the fine capillary extremity of a pencil, dipped in black colouring matter, over white paper. These black points are very different from those which constitute the glandulæ aggregatæ of Peyer. When these points are very numerous, they give a black tint to the inner surface of the intestine; when they are less numerous or smaller in size, its colour, on the con-

---

* Precis Elementaire de Physiologie.

† *Clinique Médicale—Maladies de l'abdomen.* Since the result of these researches was published, new observations made by ourselves, or by others (by M. Billard, of Angers, in particular), have confirmed us still more in the idea that the white colour of the inner surface of the intestines is their healthy state. This opinion is still further confirmed by some researches which we recently undertook on the healthy and morbid anatomy of the intestinal canal of horses. In order to study the healthy state of the intestinal canal in these animals, we opened the body of some which had died of accidents, or were killed, because a fracture or other external violence had rendered them unfit for service, whilst they were still full of strength and in good condition. The stomach and intestines of these animals were presented to us under two conditions: in some the process of digestion was in full activity, either in the stomach, or the small intestine; the others had died at a time when digestion was not going on. From these researches we feel ourselves warranted in drawing the following conclusions:

1st. The natural state of the mucous membrane of the alimentary canal in the horse, after death, is a pale colour, as marked and as general as is that of the skin on the human body. Its consistence is considerable; the villosities are tolerably apparent: the lacunæ of Sir Everard Home very manifest. With respect to the follicles, they may present in the healthy state very variable degrees of development.

2ndly. The process of digestion reddens the portions of the mucous membrane where it is taking place. This redness, which is always slight, approaches nearer to inflammatory redness than certain purely mechanical injections, since it has its site principally in the capillary vessels, and the vessels subjacent to the mucous membrane do not appear injected. It is the villosities in particular which, in the small intestine, appear to receive or retain a greater quantity of blood, than when digestion is not going on. In the cæcum, where it seems that the absorption trary, is but little changed, and it is necessary to seek for them in order to find them. On examining them with the microscope, we see that all these black points exist in the intestinal villosities, and particularly on the summit of the latter. In most of the individuals wherein we detected the existence of these black points to a great extent, and in whom the intestine did not present any other trace of alteration, there had been chronic diarrhœa. We have no doubt but that this is a pathological state peculiarly appertaining to the intestinal villosities.

115. In other phthisical patients, who have presented for a longer or shorter time before death traces of intestinal irritation, announced particularly by diarrhœa, we find the mucous membrane of the small intestine, and of the large intestine, generally white through its entire extent. If further research were not made, one might easily in such a case consider the intestinal canal as very healthy, and conceive a purging independent of any appreciable pathological state of the mucous membrane. However, an attentive examination enables one most frequently to discover some alteration either in the mucous membrane itself, which has retained its natural colour, or in the tissues subjacent to it. Thus in several cases we find the free surface of this membrane studded with numerous white or greyish granulations, which appear to be follicles more numerous, or at least larger than in the normal state. At other times the white colour is as it were interrupted from space to space by small red, brown, or black circles, which are scarcely perceivable except when the membrane is carefully washed and cleaned. In the centre of this circle there often exists another red or black point. It is very probable that this again is a species of alteration of the follicles: and if, in the human subject any doubts may be entertained on this matter, they no longer exist when this same modification of change is observed in the horse, where it is common enough. In this animal very manifest follicles are surrounded oftentimes by a similar red or black circle, which seems formed of very small vessels variously interlaced. At the same time that this coloured circle circumscribes the follicle, another smaller circle, red or black as the former, crowns in a manner the edges of its central orifice; this circle, as the preceding, is formed of a group of vessels curiously injected.

The mucous membrane of the intestine, like that of the stomach, may have retained, or at least recovered its whiteness, and it may be softened so as now to constitute merely a liquid pulp. What we have said of the nature of the softening of the gastric mucous membrane can apply also to softening of the intestinal mucous membrane.

At other times, in fine, this latter membrane, white, and apparently healthy, is raised by serosity accumulated in the cellular tissue interposed between it and the

---

of some elementary principles still takes place, the presence of the several substances reddens the mucous membrane, as that of the small intestine. In the colon, on the contrary, which seems to be but merely an organ of transmission, the presence of substances no longer produces the same effect, as in the other parts of the canal; and the redness here must be merely the result of the mechanical irritation occasioned in the colon by the too long sojourn of substances in it.

We have recently had an opportunity of examining the intestinal canal of several persons who, after external violence, passed suddenly, without any intermediate state, from a perfect state of health to death; the gastro-intestinal mucous membrane was pale through its entire extent. Once, in the case of a young girl twelve years old, who had been crushed near the hospital by the wheel of a coach, the small intestine contained some chyme; its inner surface was of a rose tint; the villosities were apparent in the form of small lamellæ of a dull white colour, from the base of which some lymphatic vessels of the same colour were seen to proceed (they were full of chyle). This observation is perfectly analogous to that we made on one of the horses above referred to. If, then, in animals who also died from accidents, in animals subjected to physiological experiments, we find considerable redness in different points of the alimentary canal, we cannot now conclude any thing from this, except that this redness was not the healthy state, but that it indicated, according to its nature, either an inflammation or a mere active or passive congestion, or a sub-mucous hemorrhage.

muscular tunic. Thus, sub-mucous œdema, still more common in the large than in the small intestine, frequently coincides with an anormal development of follicles on the surface of the mucous membrane, and particularly with the existence of the small red or black circles already described.

In others, instead of this serous infiltration, and always with a white mucous membrane, we find the submucous cellular tissue thickened, indurated, and the muscular tunic more or less hypertrophied.

116. We have already marked some of the morbid states presented by the intestinal follicles in phthisical patients. Instead of merely presenting a double injected crown, if I may so say, at their circumference and at their central orifice, we often enough see them coloured uniformly through their entire extent; and if, at the same time, they are swollen, which is the most usual case, the result is a species of pimples (*boutons*) or pustules, scattered in greater or less numbers over the inner surface of the intestine. Sometimes they present different shades of redness; sometimes they are white, and then from their cut apex, or sometimes from their orifice, which is dilated and rendered visible to the naked eye, a purulent matter flows. Such is, in our opinion, the probable source of these species of small abscesses which we have sometimes found in the intestines of phthisical patients. May it happen that under certain circumstances this purulent matter, secreted by the follicles, is modified in its nature; that it becomes concrete, friable, and of a cherry appearance: that, in a word, it is transformed into tuberculous matter; and that thus we may be led to admit that intestinal tubercles often have their seat in the mucous follicles in the state of chronic inflammation? What is certain is, that in horses, we have more than once found some follicles of the intestinal canal filled with a cheesy matter of a tubercular appearance. Shall we instance here, for the purpose of still further strengthening this opinion, with respect to the probable origin of a great number of intestinal tubercles, the singular varieties of secretion, which the mucous follicles presented in horses? Thus in these animals they are sometimes found filled with a sebaceous matter resembling that which exists in the *tannes* of the skin, which, as is well known, are nothing else but cutaneous follicles more or less enlarged. Shall we here again mention, that in horses the parietes of the inflamed mucous follicles sometimes undergo a remarkable change of texture? Both in the substance of these parietes, as well as in the cellular tissue external to the prolongation of the mucous membrane which forms them, we have seen masses of fibrous or cartilaginous tissues become developed. Thence resulted large tumours, the nature of which was sometimes indicated by the central orifice, whilst in others it seemed to have been obliterated. Thus, then, once deranged from its normal mode of nutrition, a tissue, an organ may undergo the most varied changes, and ultimately become so unlike itself, that its real nature may be completely misconceived: a tissue of a new formation may then be readily made of it: this has happened with a great number of intestinal tubercles *.

These tubercles, moreover, are scarcely ever met in the intestines, without some being also found in the lungs, and frequently also in other organs. By this we mean, as has been already said, that by reason of the individual predisposition, in every part where a process of irritation or congestion has been set up, this process is identical; that every where it gave rise to a secretion of the same nature, the product of which was the matter called tuberculous. Thus in other individuals, wherever a mucous membrane is inflamed, without this inflammation being intense, it becomes covered with false membranes; in others, every irritation, however slight it may be, produces numerous abscesses, which are not preceded by any precursory local sign, so inconsiderable was the pathological process which was sufficient to give rise to them.

---

* The opinion which consists in considering intestinal tubercles as having their site in the follicles, has been already published by several authors, and M. Billard has recently supported it by new facts (De la Membrane muqueuse gastro-intestinal dans l'Etat sain et dans l'Etat inflammatoire, 1825).

Of all the parts of the digestive tube, the termination of the jejunum and ileum are those where tubercles are most frequently developed. We have met them much less often in the commencement of the first of those intestines, not oftener than in the duodenum. More rarely again are they observed in the cæcum, and in the ascending and transverse colon; we never met them in the other portions of the large intestine.

Intestinal tubercles are principally developed, and have their primary seat on the external surface of the mucous membrane, that is, where the follicles also existed. They are sometimes seen very small, similar to white points, which are scarcely the size of a small pin's head; the largest we have seen were the size of a common pea. Whatever be their size, they present themselves under the form of rounded masses, of a dull or yellowish white, most frequently separated from one another, and much more rarely collected together. They project beneath the mucous membrane, which they raise, and which is often very healthy around them. On passing the edge of a scalpel slightly over them, the mucous membrane covering them is raised, exit is given to tuberculous matter, and in the place which it occupied there is observed a small cavity, with white edges, elevated and rounded, which perfectly resembles an ulceration. At other times, on the summit of the tubercle, there manifestly exists a small opening which seems to be the dilated orifice of a follicle. If it be objected to this opinion, that this orifice should be found on the summit of all the tubercles, if it were natural, we would answer by referring to some follicular tumours of the skin, whose orifice has also disappeared, whether it may have been obliterated or at least effaced.

Sometimes through the entire extent of the canal, no other lesions are found but these tubercles, such as we have described them. But in the majority of cases, there are observed, at the same time, either different colourings of the mucous membrane, or ulcerations varying in form and size, at the bottom of which some debris of tuberculous matter are often found.

There comes a period when this matter changes in consistence, and becomes softened, like that which constitutes pulmonary tubercles. As the latter, by becoming softened, occasion the erosion and destruction of the portions of the bronchial parietes with which they are in contact, in the same manner the intestinal tubercles, according as they lose their primary consistence, inflame the mucous membrane which covers them, bring on its ulceration, and make an exit for themselves. Then in the parenchyma of the lung, as in the inner surface of the intestine, there exists a cavity whose parietes are inflamed, and secrete a purulent matter, the quantity and qualities of which are very variable. In intestines full of tubercles, we have often met ulcerations which bore a great resemblance to pulmonary caverns; they represented, as the latter, anfractuous cavities, separated by bands of an irregular form.

In some cases, at the same time that the tubercles raise the mucous membrane which they tend to destroy, they are also developed on the side of the muscular tunic; they separate its fibres, and are found in contact with the peritoneum, which is ultimately destroyed, in the same manner as the mucous membrane. The result of this is a solution of continuity of the intestinal parietes, which usually gives rise to a peritonitis which is promptly fatal, but which has sometimes remained closed up for a longer or shorter time by a tuberculous mass.

117. Most of the alterations of texture, which chronic enteritis may produce in the intestinal mucous membrane, have been observed in phthisical patients; thus more than once we have seen vegetations, fungous growths, variable in form and in size, project from the inner surface of their intestinal mucous membrane; in other cases we have seen a purulent layer line all the great intestine, the mucous membrane of which was red, and puffed beneath it.

There is a very uncommon alteration of the intestinal canal, and one which we have twice met in phthisical patients, namely, very extensive gangrene of the mucous membrane. One of these patients had diarrhœa for the last three months previous to his decease ; he frequently complained of rather severe colics ; the appetite was for a considerable time lost ; he did not vomit ; but the taking food into the stomach was followed by pains in the epigastrium. The pyloric portion of the stomach was found to be of a brown colour. Numerous ulcerations, all round and very small, existed in the intestine. In several points the mucous membrane was raised by tubercles, several of which presented a small hole towards their centre. The inner surface of all the ascending colon, and that of the transverse colon, to the extent of half a foot, presented, as it were, a granular appearance, a uniform deep black colour, and a fetid, really gangrenous odour exhaled from it. In the rest of the great intestine, numerous ulcerations were observed, with a re-appearance of gangrenous patches in some points. This gangrene existed only in the mucous membrane.

118. Of these different alterations, we see that there is but one really peculiar to phthisical patients, that is, the presence of tubercles under the intestinal mucous membrane, whether these tubercles depend on a simple morbid secretion going on in the meshes of the cellular tissue, or result from a morbid state of the follicles.

119. Whatever be the lesions of which the mucous membrane may have been the seat, these lesions most frequently go under the common term ulcerations, which present, with respect to their number, form, nature of their edges and bottom, important varieties, for the description of which we refer to another part of the work. Nothing is more common than the existence of these ulcerations towards the end of the small intestine, and in the cæcum of phthisical patients with chronic diarrhœa. We have remarked that it was often around these ulcerations, that tubercles were met in the greatest number ; often also some few vestiges of them are found in the intervals ; but their edges and lower parts are filled with them.

120. Hitherto we have seen in the intestinal canal of phthisical patients, those lesions merely which may be all referred to a process of irritation more or less evident ; but as well as the stomach, the intestinal canal has also occasionally presented to us quite the opposite state. Its parietes, considerably attenuated, seemed to consist merely of a mucous layer of very trifling thickness, and of a pale and transparent cellular tissue, in the midst of which there were only seen some colourless fibres, vestiges of the muscular tunic. In this state, which we account for in the same way as for that of the stomach, by a diminution of the powers of nutrition, or, if you will, by a weakening of what the Germans call the *nisus formativus*, the intestine becomes filled and distended by a great quantity of liquids, as if being rendered totally inert, and really atrophied, its parietes could no longer perform but imperfectly the peristaltic movement necessary to the expulsion of its contents.

121. Finally, there is another kind of alteration of the lower extremity of the intestinal canal, which has been observed to be very common in phthisical patients ; I mean fistula in ano. We know not how the opinion so generally diffused, that this fistula is very frequent in individuals affected with pulmonary tubercles, could have been accredited ; nothing is more inaccurate according to our observation, for out of above eight hundred persons, manifestly in different stages of phthisis, we met fistula in ano but once.

122. The different alterations now mentioned may be all equally the result of an acute or chronic affection ; we must, however, except from this tubercles, whose formation is but rarely acute, and the attenuation of the intestinal parietes, which is necessarily the result of a chronic affection. It is then principally the different forms of lesion, which, by almost unanimous consent, are referred to an inflam-

matory process, which may equally come on rapidly or slowly, according to the case. Hence very different symptoms arise.

When the intestinal inflammation is of an acute character, and is at the same time intense to a certain degree, it often happens that the chronic affection of the lung, which we suppose already considerably advanced, temporarily changes its aspect, if I may so say, with respect to several of its symptoms, local and general. Sometimes it becomes less apparent; the cough is less frequent, the expectoration less profuse, the breathing seems less embarrassed; sometimes, on the contrary, it becomes worse, and the dyspnœa in particular becomes greater. In both these cases, the intestinal irritation acts as a revulsive, which, according to several circumstances more or less appreciable, produce in some an obvious improvement in the disease, whilst in others it exasperates it. At the same time the febrile movement, which already existed, changes its character; we no longer observe those double accessions, which are terminated by a profuse sweat: the latter is suppressed, the fever becomes continued, the tongue presents, according to the intensity of the intestinal inflammation, a white appearance dotted with red, or a uniformly red colour; subsequently it becomes dry and brown, is covered with black crusts, as are also the teeth and lips; the abdomen becomes tympanitic, there is diarrhœa or obstinate constipation; very frequently also nervous symptoms are observed; intermittent or continued delirium, subsultus tendinum, convulsive movements, incontinence or retention of urine, etc. In a word, all the series of phenomena characterising what are called essential fevers, present themselves. This complication carried to a certain degree, is one of the tolerably frequent causes of the premature death of phthisical patients. On examining the body, we often find, to account for these symptoms, merely intense redness of the intestinal mucous membrane; this redness most frequently is observed only in a circumscribed part of the canal, but in some rare cases it attacks the entire.

The symptoms are very different when the inflammation assumes a chronic character; it is then reduced merely to its local symptoms, and these again are often but slightly marked. Thus, for instance, many phthisical patients, whose intestinal canal is found inflamed, ulcerated, filled with tubercles, and very much disorganised over a vast extent, have not complained of any considerable pain affecting the abdomen; this is the most general case. The belly remains soft, nor does pressure on it occasion pain. In some each alvine evacuation is preceded only by a slight colic; in others the stools are not even preceded by any painful sensation. The evacuations most commonly consist, either of a clear, serous liquid, which the patients compare to water-coloured yellow or green, or of thready commonly called glairy mucus, or of a greyish very fetid pap-like substance, or finally, though more rarely, of real pus. It seems to us impossible to connect each of these species of evacuation with a determinate alteration of the intestine; all they indicate is, that this intestine is altered; and as, nine times out of ten, this alteration is a result of inflammation, we must thence conclude that the diarrhœa in phthisical patients is, in this same proportion, the sign of an enteritis or a colitis, and most frequently of one or other of these inflammations combined. The long duration of the purging is a probability for thinking that the intestines are ulcerated; but in this respect there never is any certainty. There is one thing which always appeared to us very remarkable, namely, that in some phthisical patients, who had slight purging, and that for only a little time, without any other symptom affecting the abdomen, we have found numerous ulcerations either in the small intestine, or in the cæcum, whilst in others, whose diarrhœa was of a longer standing and more profuse, we sometimes found nothing but mere injection of the mucous membrane. A woman, having a cancerous affection of the stomach, and who died in the wards of M. Fouquier, in the August of 1825, had for a long time back considerable diarrhœa (a phenomenon which seldom accompanies cancers of the stomach.) In this woman the intestinal mucous membrane was not even injected; on the contrary, it was for its entire extent remarkably pale; it had retained its natural consistence; its follicles were not enlarged, but from the duodenum to the end of the large intestine, there was serous infiltration of the submucous cellular tissue; this infiltration was considerable enough perceptibly to raise the mucous membrane, and to be visible through the substance of this latter. Thus, in this case, the diarrhœa was not connected with any existing appreciable alteration of the mucous membrane.

123. It is not always at the same period of pulmonary phthisis that the intestinal canal becomes affected. In this respect phthisical patients may be divided into four classes: in the first we shall place those, in whom the affection of the intestine seems to precede that of the lung. In the second we shall range those in whom this double affection arises and proceeds simultaneously. The third class will comprise those patients, who for a long time presented only some signs of pulmonary tubercles, and in whom the purging or other signs of intestinal affection supervene only at an advanced period of the pulmonary phthisis. The fourth class shall be reserved for those who die phthisical, the intestinal canal remaining uniformly healthy, which is the most uncommon case. We shall present a summary of our observations on these different cases.

We have often seen persons at La Charité, who were for a long time labouring under chronic diarrhœa when we first saw them. They were already in a more or less advanced stage of marasmus; they had a continued febrile disturbance, with an accession once or twice a day; they had no cough, nor had they ever had any; their breathing was free, auscultation and percussion announced a healthy state of the pulmonary parenchyma. They had, if I may so say, merely *intestinal phthisis.* But after a longer or shorter time, a little cough began to appear, deep inspirations became impossible, more or less profuse hemoptysis took place; auscultation and percussion as yet gave no information, but the symptoms altogether were sufficient to incline us to suspect the existence of pulmonary tubercles, which being developed consecutively to the intestinal phthisis, became an alarming complication of it; if, then, the individual died, we found traces of chronic inflammation in the intestine, whilst in the lung there was as yet nothing but crude tubercles, and those few in number. At other times, the patients prolonged their existence for a longer time; the pulmonary tubercles went on increasing, and they did not die until the pulmonary parenchyma had numerous caverns, the presence of which was detected by auscultation.

In cases of this kind, a slight cough may be the only morbid phenomenon marking an affection of the lung. Too often preoccupied by the primary disease of the intestine, referring to it with good reason both the marasmus and all the serous symptoms which are observed, the physician does not always pay sufficient attention to this cough; he allows it to become domiciliated as it were, and it is only the autopsy which shows that pulmonary tubercles are the cause of this cough. Convinced by observation, that persons affected with chronic enteritis have a fatal tendency to pulmonary phthisis, we think we should never neglect to combat, by active means, the colds with which they are affected, however slight they appear. Too often, in this case, temporising has been fatal: in consequence of it, a slight bronchitis has rapidly given rise to numerous tubercles, and from that time cure was quite impossible; for it is not under such a combination of circumstances that one can hope to bring about the cicatrisation of the caverns.

Case 16.—*Symptoms of chronic entero-colitis preceding those of the pulmonary affection—Tubercles in several of the abdominal viscera.*

A man, twenty-eight years of age, tall and muscular, had been residing in Paris for the last five months, since which time he had slight diarrhœa, which was suspended several times. For the last eight days he had a cough.

The beginning of March, he entered the hospital, and was prescribed mere diluent drinks, he being considered to be affected with one of those irritations of the intestinal mucous membrane so common, and so often kept up by bad treatment and irregularities of diet. Pulse frequent. Three palettes of blood were taken from him. During the entire month of March, the cough and diarrhœa succeeded each other alternately. Breathing a little short; expectoration that of acute catarrh. Percussion and auscultation detected nothing; stools watery, sometimes preceded by colicky pains. Pulse still frequent. Patient lost flesh and strength. This affection, which at first seemed to consist in a temporary irritation of the gastro-pulmonary mucous membrane, now began to assume a more serious appearance. The beginning of May, the cough diminished and the diarrhœa became very profuse. M. Lerminier now resolved to try the effect of a powerful revulsive, and applied a large blister over the abdomen, this diminished the diarrhœa, but the cough became more severe, and the oppression was also increased. The patient became more emaciated every day; cough still continued. The diarrhœa returned; the stools became bloody; on the 16th of May he got up several times without assistance to go to stool; there was no appearance of death being near at hand, and in the evening of this day he expired without a struggle.

Post mortem. The lungs were studded with an immense number of miliary granulations, of a greyish white colour, semitransparent. At the apex of the left lung there was found a mass of tuberculous matter, the size of a large nut. The mucous membrane of the trachea and bronchi, through their large and small ramifications, were intensely red. A considerable quantity of lemon-coloured serum was effused into the peritoneum. Tuberculous masses were found in the posterior epiploic cavity, behind the pylorus, near the small lobe of the liver and above the pancreas, which was very large, but healthy. Nothing remarkable in the small intestine. The inner surface of the large intestine, from the cæcum to the rectum inclusively, was studded with a considerable number of black points separated from each other, and surrounded with slight puffiness of the mucous membrane. In three other places there were found three small ulcers, each capable of holding a five sous piece, black at the edges and bottom. The mucous membrane of the rectum was white, but extremely soft. Some small crude tubercles were found in the liver; a much greater number were found in the spleen; they were also of a larger size; some were beginning to soften; some tubercles were also found in the substance of the two kidneys.

In this patient, the organ which seemed most seriously affected during life, was the intestinal canal. From all the symptoms one would expect to find much more serious alterations in the digestive tube, than those which were found there. With respect to the lungs, the lesions found in them were not at all recognised during life; they might have been suspected from the general symptoms, but no local morbid phenomenon could afford any certainty of their existence. Here, then, it was the abdominal affection which predominated, and it was to it that the cause of the alarming symptoms must be referred, which ultimately terminated in the patient's death. We see in this case a remarkable example of those sudden deaths which happen prematurely, if I may so say, and which, common as they are in chronic diseases, are still unexplained.

Sometimes pulmonary tubercles have preceded chronic enteritis; but whilst the latter, once produced, has not ceased to progress, the others remained stationary, so that one might say that they have but a small share in the production of the symptoms. Here, without an exact knowledge of the previous circumstances, one would naturally be inclined to think that the pulmonary phthisis followed the intestinal phthisis, whilst it is not in this way that nature has proceeded. The following case will afford an example of this kind.

CASE 17.—*Pulmonary phthisis which seems to become stationary, and the symptoms of which disappear at the same time that a chronic gastro-enterite manifests itself, the development of which follows the administration of* Le Roy's *purgative, and which is the principal cause of death.*

A man, thirty-five years of age, contracted pulmonary catarrh, 1820, during which he had several attacks of hemoptysis. During the year following he continued to cough, he became emaciated, and again spit blood several times. For the purpose of curing himself of his cold he took strong doses of Le Roy's drug. From that time profuse diarrhœa set in, which continued to the month of April, 1824, at which time he entered the La Charité; his state was then as follows:—Extreme emaciation; diarrhœa, with slight colics before each evacuation; cough slight; expectoration catarrhal; chest sonorous in every part; respiratory murmur generally clear and loud; no dyspnœa; pulse frequent; skin habitually hot and dry. From all the symptoms the principal disease seemed to be in the digestive tube; still the long standing of the cough, the occurrence of the hemoptysis, should make one apprehend the existence of pulmonary tubercles, but for this there was only mere probability; the patient became weaker and weaker, and died the 16th of June, 1824.

The post mortem presented but a small number of crude and small tubercles towards the summit of both lungs. Bronchi but slightly red. The mucous membrane of the stomach was observed to exist merely in the form of separate patches of greater or less breadth, separated by white spaces, where the tissue lying under the mucous membrane was exposed. The end of the small intestine presented on its inner surface but one immense ulceration with black colouring of its bottom, was formed of the sub-mucous cellular tissue considerably thickened. Around the cæcum there were found enormous masses of lymphatic ganglia transformed into tubercles.

It is very probable that, in this individual, tubercles existed in the lung for the last four years; but they remained stationary, and acted but a very secondary part in the emaciation and death of the patient. The cause under the influence of which the chronic gastro-enterite was developed is here very evident.

In some persons we have seen the tubercles preceded in their development by the group of symptoms constituting the *mucous fever* of several nosologists. Persons in good health, but of delicate constitution, of a lymphatic temperament, and seemingly disposed to scrofula, entered the La Charité in a state of general languor. The face was pale, eyes dull, features immoveable, intelligence heavy, movements slow and listless; there was a well-marked and continued febrile disturbance. Did we seek for the cause of these symptoms in a local affection? Nothing was found on the part of the thoracic organs, and the digestive apparatus seemed to be the sole site of any lesion. But this lesion had something peculiar, and different from the characters of ordinary gastro-enteritis. Thus the tongue presented no trace of redness, it was covered with a very thick whitish coat, and all the mucous membrane of the mouth secreted a great quantity of mucosity. The abdomen was soft and free from pain, appetite completely lost; without there being either nausea or vomiting there were alternations of constipation and of mucous diarrhœa. However, these patients became more and more emaciated, then they began to cough; their expectoration, at first mucous, became purulent; caverns, announced by auscultation, were formed in their lung, and they died phthisical. On opening the body tubercles were found in the lung in different states, and in the digestive tube undoubted traces of inflammation; red softening of the gastro-mucous membrane; ulcerations more or less numerous in the remainder of the intestine. The autopsy here showed lesions entirely similar to those found in other individuals who presented during life symptoms totally different. So true it is that, by reason of various temperaments and individual predispositions, the same mode of organic alteration may produce functional disturbances widely different. In the individuals whose history we have now traced, the inflammatory process first attacked principally, perhaps, the mucous follicles of the entire digestive tube; it is certain, at least, that in the mouth they were especially affected. It is, perhaps, from their destruction that the intestinal ulcerations resulted at a later period. Be that as it may, this inflammation (for we must apply this generic term to the pathological process which produces ulcerations, at the same time that we acknowledge that we must not confound it with others announced by different symptoms), this inflammation, I say, a long time confined to the digestive mucous membrane, was propagated to the bronchial mucous membrane, and by reason of the temperament and predisposition of the patients, the inflammation of the bronchi was soon followed by tuberculisation of the lung.

Let us direct our attention to other cases in which the twofold affection of the lung and intestines seems to arise simultaneously, to progress simultaneously, and to contribute equally to the death of the patients. These cases are more common than the preceding; the commencement of the disease seems to announce nothing alarming; there are observed for a longer or shorter time continued alternations of cough and diarrhœa, as if the irritation went alternately from the bronchial to the intestinal mucous membrane. Under the influence of suitable treatment these alarming symptoms appear to cease; but they reappear from the least deviation from regular regimen, from the least accidental cause. At first the general health is but little altered; but according as the pulmonary and abdominal fluxes become more frequent, both health and strength diminish. At last a period arrives when the bronchitis and enteritis no longer alternate, but exist simultaneously; then more serious symptoms ordinarily begin to appear if a suitable treatment is not employed and followed up regularly; and too often, in spite of this treatment, signs of pulmonary tubercles manifest themselves, the continuance and profuseness of the diarrhœa announce a constantly increasing severity of the intestinal affection; thence oftentimes arise all the symptoms of acute phthisis, and a termination which is speedily fatal.

It should, on the contrary, be considered as a fortunate circumstance that the pulmonary phthisis runs through its first stages without being accompanied by signs of intestinal irritation. This happens in some cases, but unfortunately too rarely. We see phthisical patients in whom tuberculous excavations already exist in the lungs, and who have not yet had any diarrhœa; they are even habitually constipated. But ultimately a period arrives when, under the influence of causes more or less appreciable, some diarrhœa supervenes; inconsiderable at first, and often intermittent, it goes on increasing, becomes continued, and contributes very much to accelerate the death of the patient.

Lastly, we have said, there are some phthisical patients who die without ever having presented any morbid phenomena on the part of the intestines, and in whom these are found in a healthy state. This case must be considered as the most uncommon of all, especially if we take into account the facts already stated, and which prove that an intestine is not free from disease, for this sole reason, that its mucous membrane presents a white colour. Pathological anatomy has made great progress in this department in latter years, and now we can say, in a much more general way, that it is only two years since almost all abdominal fluxes, and particularly those of phthisical patients, can be referred to an appreciable lesion of the intestines. With respect to the nature of this lesion, it appears to be inflammatory in the great majority of cases.

SECTION III.

DISEASES OF THE ORGANS APPENDED TO THE DIGESTIVE APPARATUS.

124. We include under this head—1st. The peritoneum ; 2ndly, the lymphatic vessels which take the chyle into the intestinal canal, and the mesenteric glands into which they enter ; 3rdly, the different glands which pour a particular liquid on the internal surface of the digestive tube, namely, the salivary glands, the liver, and the pancreas.

125. Inflammation of the peritoneum is not a very rare affection in phthisical patients ; it may exist in them in the acute or chronic form.

The acute peritonitis of phthisical patients oftentimes comes on without a known cause ; but most frequently it is owing to an intestinal perforation, an accident which, in phthisical patients, is however less common than one might be inclined to suppose, considering the great frequency of the ulcerations which occur in the intestinal canal. But these ulcerations, without perforation, are themselves frequently in phthisical subjects a cause of peritonitis. This happens principally when these ulcerations are very deep, and when the muscular membrane, being laid bare, forms the bottom of the ulcer : observe then the peritoneum around the latter ; you will find it oftentimes injected, red, and covered even with a purulent exudation ; sometimes, also, this partial inflammation extends to another portion of the peritoneum appertaining to an intestinal convolution, and which is in contact with that where the ulceration exists ; then adhesions may be set up between these two intestinal convolutions, and at a later period, if the ulcerations perforate, these adhesions will form a fortunate barrier which circumscribe the effusion. We have several times observed this process of nature.

These peritoneal inflammations of a partial nature, and thus limited to the parts around one or more ulcerations, do not ordinarily occasion any particular symptom which can indicate their existence ; but they often become more or less general, and then they are characterised by the ordinary symptoms of these formidable inflammations. Sometimes, however, though assuming an acute character and occupying a great extent, inflammation of the peritoneum has attacked phthisical patients without being announced by this acute pain, which is one of its most marked signs. Such, in particular, was the case of a young man eighteen years old, who entered the La Charité presenting all the symptoms of pulmonary phthisis with the existence of cavities, and having at the same time profuse diarrhœa ; the abdomen was perfectly soft and free from pain. Suddenly he was seized with vomiting of a greenish matter ; his features became very perceptibly altered all at once ; pulse became very frequent ; abdomen showed a tendency to become painful, and he died on the third day after the appearance of these new symptoms. On opening the body tuberculous cavities were found in the lungs, numerous ulcerations in the intestines, and still further, purulent effusion into the peritoneum.

Chronic inflammation of the peritoneum is also observed in a certain number of phthisical patients. But sometimes, like inflammation of the intestinal mucous membrane, it precedes the development of pulmonary tubercles ; sometimes it shows itself at different periods of their existence. In both cases its commencement is sometimes marked by symptoms so slight, it is often so completely free from pain, that its diagnosis may present considerable difficulty. On the other hand, as it alone may produce hectic fever, marasmus, and a certain degree of dyspnœa, it follows that when it is primary, the period at which it is complicated with pulmonary tubercles, it is often impossible to determine ; thus, in certain cases, the existence of the latter was only ascertained by a post mortem examination. What then should be the signs that could make us recognise them? They could only be those afforded by the expectoration and auscultation. But as long as tubercles are in a state of crudity, it is evident that these signs can yield but very vague information.

Amidst peritoneal adhesions, masses of tuberculous matter are very frequently developed in phthisical patients, which here, as in the pleura, are very evidently the result of a morbid secretion which has taken place in a serous membrane attacked with inflammation. Here even, by means of an attentive examination, we may see simple membranous concretions confounded by insensible shades with what is called tuberculous matter; in certain cases the former resemble the latter only in their arrangement; thus they constitute small rounded granulations, separate or collected together, which seem as it were deposited on the surface of the peritoneum. At other times they have not only the form of tubercle, but they gradually acquire its other physical properties; the matter which constitutes them becomes friable, as if cheesy, or else these false membranes themselves secrete in the intervals between them a concrete semi-solid pus, which again constitutes one of the varieties of that which is so vaguely called tuberculous matter. From these facts we may conclude that in the peritoneum, as in several other organs already mentioned, tubercle is nothing but the result of a morbid secretion which has taken place on the surface or in the parenchyma of an organ more or less manifestly inflamed.

In some phthisical patients whose abdomen was swollen without pain during the latter periods of life, we have found in the peritoneum merely an accumulation of limpid serum, without any trace of inflammation, and without there being either in the vena portæ, liver, or heart, any appreciable lesion by which this ascites could be accounted for. We shall have an opportunity of returning to this point at a future period, as we wish to notice it here only as far as it may be connected with the history of phthisis.

The result of the facts already stated is that, in the case where there is but an affection of the intestinal mucous membrane, phthisical patients experience remarkable abdominal pains only in a manner exceptionally, and these pains become acute only when the peritoneum itself is inflamed. Lastly, it must not be forgotten that this latter inflammation, particularly when considered as a complication of pulmonary phthisis, may also present itself altogether free from pain, whether in the chronic state or even in the acute state. We once saw in a phthisical patient an abdominal pain having all the characters of peritoneal pain, produced, however, by another cause—namely, by a vast ecchymosis in the portion of the peritoneum which lined the muscles of the abdomen on the right side, and which extended from the umbilicus to the pubis. The serous membrane itself had its natural transparence and ordinary thickness, and presented no appearance of injection.

126. The mesenteric glands are generally affected in phthisical patients in the direct ratio of the affection of the intestinal canal itself. This rule, however, is liable to numerous exceptions: thus, more than once we have found enormous masses of glands in the mesentery, all along the vertebral column, and as far as the site of the thoracic duct, though the intestine was but slightly affected. At other times, on the contrary, the latter was very much ulcerated, and the glands were scarcely tumefied. From these facts we shall not draw the inference that the affection of the glands is independent of that of the intestines, and we do not seek to overturn by exceptions a general law. In these exceptional cases we rather recognise an effect of individual disposition, in virtue of which such a system of organs is more or less easily affected. Thus, in some, slight erysipelas of the arm is sufficient to occasion engorgement and oftentimes suppuration of the

axillary glands, whilst, in others, an immense phlegmon of the upper extremity lets them remain almost intact.

The nature of the alterations of the mesenteric glands in pulmonary phthisis is of three species :—1st, they present mere tumefaction of their tissue, with red, brown, blackish colouring, or sometimes only a pale grey colour ; 2ndly, they are filled with pus, which sometimes infiltrates them, and sometimes forms in them abscesses, so that by the extension of these the gland may be reduced merely to its enveloping membrane, which then serves to form the parietes of an abscess ; 3rdly, again, instead of secreting pus they may secrete a more solid matter, which is called tuberculous, and sometimes this latter secretion itself is modified in its turn, so as to produce in the midst of the gland small cretaceous masses, real stony concretions. There are cases where one may very well follow the gradual formation of the tuberculous matter in the midst of a mesenteric gland, swollen, red, and evidently inflamed : it is first seen to be in a manner arranged in the form of small grains of a yellowish white, which enlarge, increase in number, and extend more and more. Some persons have considered as a tuberculous state of the mesenteric glands, a state which, in our opinion, differs considerably from it. In this latter state, instead of containing a yellowish friable matter crumbling readily under the finger, these glands, having become larger than usual, are of a dull white colour, or shining like cartilage ; they have its elasticity and sometimes its consistence ; in all cases they are not broken up without considerable difficulty. We consider this state as being nothing else but the termination of a ganglionitis in simple white induration, approaching to that which takes place in certain portions of the cellular tissue, and in particular of the sub-mucous and sub-serous cellular tissue. It is probable that, in this case also, it is the cellular tissue intermediately between the lymphatic vessels which becomes thickened and hardened. This is what several medical men consider incorrectly, in our opinion, as a tissue of new formation (scirrhous tissue).

127. Not only the mesenteric glands are frequently affected in phthisical subjects, but the lymphatic vessels themselves also, which go from the intestines to these glands, have sometimes presented a very remarkable morbid state, and which sometimes had its site in the liquids contained by the lymphatic vessel, sometimes too in the parietes of this vessel. Thus four or five times we have seen lymphatics, which passed on from intestinal ulcerations, filled to a great extent of their course with a semi-concrete purulent matter like to tubercle commencing to soften. As the vessel was unequally filled with it the result was swellings, a species of nodes more or less approximating to one another, between which the lymphatic vessel recovered its transparence or took on a whitish tint. But what was peculiarly worthy of remark was, that as long as the lymphatic traversed the parietes of the intestine, the small rounded swellings formed by the white and semi-concrete matter which filled them unequally, resembled perfectly the tubercles which are ordinarily developed in the form of granulation in the substance of the intestinal parietes. It would be premature now to attempt to characterise the nature and assign the origin of the species of tuberculous matter which we found in the lymphatics. Was it formed in these vessels themselves ? Was it introduced into them by absorption ?

Other lymphatic vessels which presented an appearance similar to the preceding had, however, undergone another kind of alteration. It was no longer a foreign matter which was contained within them, it was their own parietes which, thickened and hardened in different places, produced swellings more or less marked. These vessels, as the preceding, were sometimes lost in the mesentery after a certain course, and sometimes might be traced as far as tumefied and tuberculated lymphatic glands.

These facts, as also others relative to certain alterations of the thoracic duct, which we have cited elsewhere, seem to us to possess considerable interest, as being calculated to throw some light on the connexion of tubercles with certain morbid states of the lymphatic vessels. Hitherto much has been said of this connexion without its being demonstrated by any direct fact.

128. We shall say but few words regarding the diseases of the glands appended to the digestive tube. We never observed any affection of the salivary glands in phthisical patients. The liver presented some alterations, which have been already as well described as we could do it here. Of these alterations some may be more particularly considered as peculiar to phthisical patients: such is, first, the fatty state of the liver, whose existence we have discovered in about one-third of the patients who died of pulmonary phthisis in the wards of M. Lerminier. This state, the nature and cause of which are so obscure, did not appear to be announced by any particular symptom which could induce us to suspect its existence. It did not appear to us to coincide more frequently with a morbid state of the duodenum than with a healthy state of this intestine. We shall observe, however, that one of the most serious alterations which we found in the duodenum was in an individual whose liver had undergone the fatty degenerescence to a very high degree. In this patient, in fact, the duodenum, red through its entire extent, presented in its two latter portions a great number of small ulcerations, round or oblong, pressed one against the other, giving the mucous membrane in some measure the appearance of a sieve; their bottom was blackish, a colour important to be noted, because it seemed to indicate the former state of its ulcerations.

Another alteration of the liver, peculiar to phthisical patients, is the presence of tubercles in its parenchyma. In adults they are but rarely observed, scarcely once in fifty cases: we have met them more frequently in children. Sometimes, too, we have seen those tubercles in the appendages of the liver, or around them. Thus we have seen some in the substance of the parietes of the gall-bladder, which were not altered around them; others developed in the course of the different biliary ducts, had partly obliterated the cavity, and gave rise to jaundice; in two phthisical cases only, we have observed this kind of complication produced by the mechanical cause of which we have just spoken; the liver was fatty in one of these cases; in the other it appeared healthy. These are the only two occasions on which we saw jaundice in phthisical patients.

Other species of morbid change may have attacked the hepatic apparatus of phthisical patients; but these changes, entirely accidental, are not peculiar to them, as the fatty degenerescence of the liver seems to be; they may also exist separately, or coincide indifferently with all species of disease; to speak of them here would be digressing from our subject.

The pancreas is almost as seldom affected in phthisical patients as the salivary glands. Only once have we found it diseased; but even in this case its granulations were not altered; two or three small tubercles, each the size of a pea, were developed in the cellular tissue, which united these granulations to each other.

SECTION IV.

DISEASES OF THE URINARY APPARATUS.

129. With respect to the urinary apparatus, there is no occasion to repeat here what is written everywhere, namely, that in phthisical subjects it sometimes presents tubercles, either in the kidneys, or in the substance of the parietes of

the bladder. In the kidneys, as in the different parenchymatous organs, a very healthy tissue most frequently surrounds these tubercles; at other times, the substance of the organ is red, softened, and inflamed. In one instance we saw them limited to the cones of the tubular substance, of which all that now remained was merely its form.

With the exception of these tubercles, we have not found in the urinary organs any lesion connected with phthisis, and of which we might not as well speak when treating of any other disease, as when treating of this latter. However, we must not pass over in silence a fact which may serve to illustrate the etiology of tubercles. In a man who died in the La Charité, in the wards of M. Fouquier, we discovered a remarkable alteration of the urinary passages. The inner surface of the bladder presented a black colour of the mucous membrane, with numerous ulcerations, and perceptible thickening of the subjacent tissues; near its neck there existed an opening through which the urine passed to penetrate and sojourn in a pouch which might have held an apple at least. This accidental pouch was formed in the cellular tissue, interposed between the bladder and rectum. Its inner surface was lined by a smooth and blackish layer, which presented an appearance entirely similar to the mucous membrane of the bladder itself. But still further, this is the fact to which we here wish particularly to direct attention, the parietes of the pouch here mentioned were studded with a great number of small bodies of a yellowish white, irregularly rounded, readily crumbling under the finger, presenting, in one word, all the characters of tuberculous matter. Here the very commencement of the formation of this matter was evidently an inflammatory process; but in how many patients have similar lesions not been followed by the production of tubercles! Here, again, regard must be had to individual predisposition.

SECTION V.

DISEASES OF THE LOCOMOTIVE APPARATUS.

130. These are very few in phthisical patients. We shall direct attention, however, to the diminution in size, to the real atrophy which the muscles undergo in these patients. The want of colour of the fleshy fibre, the attenuation of the fasciculi which it constitutes, are connected with the state of the blood, in which it must be admitted *a priori*, that the quantity of serum greatly exceeds the quantity of fibrine and of colouring matter. These facts, generally known, may lead to the knowledge of the real nature of several lesions, which the internal organs of phthisical patients present. The species of atrophy which some of these undergo (the heart and digestive tube in particular), the diminution of their consistence (heart, intestines, nervous centres), may they not depend, as in the muscles, on a mere modification of nutrition, connected with a vitiated state of the function of hematosis, without its being necessary to admit a previous inflammatory process for several of these cases?

We have but very seldom seen tubercles in the muscles, and again, when we did meet them there, these tubercles were not situated in the muscular fibre itself, but rather in the cellular tissue situate between the different muscles, or between the fasciculi of one and the same muscle.

131. In four phthisical patients only have we met a perceptible alteration of the bones. In two of them pulmonary tubercles seemed to be the principal affection. In the other two they performed but a very secondary part in the production of the symptoms, and of death.

CASE 18.—*Tubercles in the tibia.*

A young man, twenty years of age, presented all the symptoms of pulmonary phthisis with cavities in both lungs; the lymphatic glands of the neck were swollen and painful; the skin covering them was red in some points. This patient had, at the same time, chronic diarrhœa, and, moreover, immediately above the internal malleolus of the right side, there was an indistinctly circumscribed tumefaction of the skin, with two or three small fistulous tumours, whence flowed a greyish, fetid pus. He referred the origin of this latter affection to a kick of a horse, which he had received on the lower part of the tibia. Previous to this, he had had some symptoms of pulmonary phthisis. At the autopsy, tubercles were found in the lungs in every stage; there were some also in the cervical, axillary, and mesenteric glands; the bronchial ganglions presented none; the intestinal mucous membrane was ulcerated in a great many points. The lower part of the right leg was carefully examined; the skin was separated to a considerable extent above and around the malleoli; in every place where this separation took place, the bone stripped of its periosteum was rugose and uneven at its surface. Still more, over the anterior surface of the tibia, there was a rounded cavity in the bone, capable of holding a nut, and in which a yellowish white matter was contained, still solid at its circumference, where it might be crumbled under the finger, like curd; at its centre changed into a whitish soft substance, which appeared particularly to consist of two parts, the one mere liquid, as it were serous, and the other consisting of small white clots, which swam in the former.

This case presents a very remarkable instance of tubercles simultaneously developed in several organs. The primary cause from which the affection of the tibia seemed to arise, is worthy of attention: it was, in fact, after external violence that the bone became the seat of acute pain, where it had been struck, and that the lower end of the right leg began to become swollen; at that time pulmonary tubercles already existed in the lung, so that the same disposition which had produced them in this organ, and in the lymphatic glands of different parts of the body, also favoured their development in the osseous system, where a process of irritation was momentarily set up. If the latter had appeared in individuals differently disposed, it would have had different results. We think we cannot too often point out that infinite variety of phenomena, which one and the same cause may produce, according to the idiosyncrasy of the individuals on whom it acts.

CASE 19.—*Tubercles in the bodies of the vertebræ and of the sacrum.*

A man, forty years of age, died in the La Charité, in the wards of M. Fouquier. The lungs contained numerous tubercles. Before the body of the last lumbar vertebræ and of the sacrum, there existed an immense purulent collection, beneath which these bones were found divested of their periosteum. In the substance of the body of the two last lumbar vertebræ, small irregularly rounded cavities were formed, to the number of four or five, all being nearly the same size, each capable of containing a nut. Some communicated with the purulent collection. Others existed in the centre of the body of the vertebræ, and had not as yet an external opening. Each of these cavities contained a white, friable substance, altogether resembling the tuberculous matter of the bronchial ganglions. External to the two first anterior foramina of the sacrum, there existed another cavity longer than the preceding, and which contained merely some debris of tubercles, in the form of granular masses, suspended in the midst of purulent matter.

The presence of real tubercles in the vertebræ is a rare fact in pathological anatomy, or at least they are not often met in that state of crudity which will allow of their being readily recognised. In most of the cases where there is what is called *caries* of the vertebræ (a vague and very ill-defined term), nothing else is found but a more or less complete destruction, a pulpy softening of one or more vertebræ, and often also mere inequalities on the external surface of their body, which is divested of periosteum, and is bathed in pus.

SECTION VI.

DISEASES OF THE NERVOUS SYSTEM.

132. The brain and its appendages are in the number of those organs which we have most constantly found healthy in phthisical patients, or at least most constantly exempt from lesions which we could appreciate. What we have now said is applicable only to adults ; for it is well known that in consumptive children tubercles very often exist in the brain. We never met any in those persons who died of pulmonary phthisis, in the wards of M. Lerminier, which proves at least that they are very rare. With respect to the cerebral membranes, the pia mater is very often found evidently infiltrated with serum, either limpid, or a little turbid, without its being possible to refer any morbid symptom to this infiltration, which is also found in the majority of those who die of chronic diseases. If, accordingly, after death the brain of phthisical patients be found generally healthy, this absence of lesion agrees with the general absence of symptoms arising from the nervous system which is observed in these patients. The different functions of animal life most frequently remain intact up to death, except that their energy is diminished : in some, however, delirium sets in some days before the fatal moment ; but to account for it, the brain and its appendages have not presented any uniform lesion ; sometimes we have found the pia mater more injected than usual, and a well-marked rosy tint of the cortical substance of the surface of the hemispheres ; sometimes a perceptible quantity of serum was effused either into the different ventricles, or principally at the base of the cranium ; sometimes we found the brain colourless, as well as its membranes, no effusion into the ventricles, or elsewhere, a natural consistence of the nervous substance : in a word, no lesion which could account for the delirium. No doubt, we cannot too much encourage and multiply those researches whose aim is to connect each functional disturbance of the brain, with an appreciable lesion of this organ ; beautiful and important discoveries have already been the fruits of researches of this kind ; but to say that in all cases where there has been disturbance in the functions of the brain, a lesion of the nervous centres must necessarily be found, is to express an opinion refuted by very numerous facts. Certainly this lesion exists, since in sound physiology we cannot admit that a function can be disturbed without the organ which is the seat of it being itself altered ; but what must be acknowledged is, that in the nervous system particularly, this alteration entirely escapes us in a great number of cases.

The following case serves to confirm the above assertions :—

CASE 20.—This was the case of a woman, thirty-five years of age, who, three months before entering the hospital, lost her voice, which she did not afterwards recover. When we saw her, the laryngeal affection seemed the principal ailment ; the existence of pulmonary tubercles could only be suspected. However, the symptoms of phthisis subsequently became much more marked. This woman, after being some months in the hospital, suddenly, and without any known cause, fell into a state of coma ; the extremities of the right side, when raised, fell down as an inert mass ; their sensibility also went. Hemiplegia of the right side was evident. She died in a day or two after.

No morbid appearances we discovered in the brain. A small tubercular cavity was found in the summit of one of the lungs, and in the remainder of it a great number of miliary tubercles. The chordæ vocales were ulcerated.—Death in this case occurred, as in a great number of cerebral affections, in consequence of the suspension, or at least the diminution of the nervous influence on the respiration.

133. Thus, in this case, a consumptive patient dies of a brain affection, and after death we find no appreciable lesion of this latter organ, or of its appendages. In some other consumptive patients, on the contrary, whose nervous system had not presented any very apparent functional disturbance, we found in the encephalon a very remarkable lesion of its central parts. The corpus callosum, in a portion of its extent, was visibly softened; but, above all, the septum lucidum and the fornix no longer existed, except in the form of a whitish pap, which was raised as a liquid substance, and which exposed the choroid plexus. This softening, or rather liquefaction of the fornix, terminated posteriorly at the commencement of each corpus fimbriatum, and anteriorly at the bifurcation of its anterior pillar; each of the divisions of the latter might be traced, as usual, as far as the mamillary bodies, which retained their healthy appearance. In one of these cases the white substance which forms the external covering of the optic thalami had participated in the pulpy softening of the fornix; it was partly destroyed, and exposed to view the grey substance; in fine, at other times, and always in consumptive persons, we also found softened, liquefied, and completely destroyed in several points, the species of white cortical substance which covers the inner grey substance of the cornua Ammonis. In these different individuals, we repeat, there was neither delirium, nor any apparent disturbance of the different functions of animal life. Neither did they present that exaltation of the sensibility of the skin of the trunk which has been recently remarked by a distinguished observer, Dr. Senn of Geneva, as one of the characteristic signs of softening of the central white parts of the brain. As we percussed and auscultated several of these patients a few days before death, this morbid exaltation of the sensibility of the trunk could not have escaped us if it did exist.

The softening now spoken of does not present, in an anatomical point of view, any of the characters of inflammation; we do not find, either around it, nor where it exists, any trace of vascular injection: there is nothing to prove that the softened substance contains pus, since it retained its natural colour; in a word, its consistence only is changed. A train of reasoning, founded on very admissible analogies, may certainly lead us to admit that this change of consistence is sufficient to prove the existence of inflammation. This opinion has some probabilities for it, but no fact proves its strict accuracy. As for our part, we would be disposed to compare the particular cerebral softening now in question, with certain softenings of the heart, of the muscles of animal life, and of the parietes of the stomach, the inflammatory nature of which we do not hold to be a thing proved, and which depend probably, as we have already hinted (111), on the greater or less change which the great phenomenon of nutrition must necessarily undergo in all the tissues, when, under the influence of a certain number of chronic diseases, the blood is no longer duly modified or repaired. Be that as it may, let us collect facts, and not endeavour to give a hasty interpretation to them. It is a great advance made in science to know how to suspend one's judgment on several points, whose solution does not seem doubtful, when they have been as yet but superficially studied.

SECTION VII.

DISEASES OF THE GENITAL ORGANS.

These organs we have found to be but seldom altered in phthisical patients. However, they do not escape the law in virtue of which tubercles, having been once developed in the lung, have a tendency to be produced also in other parts. Thus we have found these tubercles in the testicles, in the parietes of the vesiculæ seminales, in the tissue of the uterus, in the ovaries, and even in the substance of the Fallopian tubes. But these cases are uncommon, and the genital organs of both sexes must also be placed among those parts which, in phthisical patients, become least generally the seat of tuberculous degenerescence.

Neither must it be supposed that it is only in the cases where several parts have been attacked by tubercles that these organs also may be found affected with them; the contrary has been observed: thus, in a woman, twenty-nine years of age, the right Fallopian tube, being of a bright red externally, being considerably enlarged, contained in its parietes large masses of tuberculous substance. The two lungs were the site of immense cavities; the intestines were ulcerated; but in no part else were there any tubercles.

During life the genital organs seldom present any other obvious change except derangement of the menses in woman. With respect to this it is difficult to lay down a principle which has not its exceptions: there are some women whose menstrual periods are suspended from the time they begin to cough; there are others who continue to have them up to a very advanced stage of their disease. However, in the majority of cases, the menses continue for a considerable time after the appearance of the primary symptoms; and it is only at the period when the tubercles begin to soften, and when febrile disturbance is established, that the menses, after being first deranged, become ultimately suspended.

CHAPTER IV.

PROGRESS AND DURATION OF PULMONARY TUBERCLES.

134. Portal, Bayle, and other authors, have already remarked the numerous varieties which phthisis presents with respect to its progress and duration. A space of two years appears to us to be the mean term of the duration of this affection in the individuals whom we have seen in the Charité. But it is clear that one can no longer compare, with respect to its duration, the pulmonary phthisis affecting poor labouring persons, in whom the absence of necessary care tends to hasten its progress, and this same phthisis when it attacks persons in affluence. In the latter class it must, cæteris paribus, have a longer duration.

135. In the description of persons who are treated in hospitals, there are some, however, in whom pulmonary phthisis is prolonged for a much longer time, and takes on a progress remarkable for its slowness, absolutely speaking. Thus several patients had been affected with a cough for several years when we examined them for the first time. The profuse attacks of hemoptysis to which they had been subject, and the difficulty of breathing, which they had not ceased to experience since the very long period from which they dated the commence-

ment of their cough, the habitually delicate health in which they had remained from that same period, all appeared to indicate that in them the pulmonary tubercles, whose existence was proved by the autopsy, had been in existence for a very considerable time. But probably these tubercles had increased but very slowly both in number and size; no complication accelerated their progress; and by reason more especially of a happy disposition of the subject, they had not exerted a destructive reaction on any important organ; thence the long absence, or at least mildness of the symptoms, whether local or general. Such was, for instance, the case of an old man, seventy-six years of age, who for the last thirty years and more had cough and frequently spit blood, and in whom we ascertained in the post mortem the existence of tubercular phthisis.

136. At other times, on the contrary, pulmonary phthisis takes on a very rapid course, and it may then be truly considered an acute disease. But here again several varieties present themselves, which we shall respectively notice.

137. First, there are cases in which pulmonary phthisis shows itself with its usual symptoms, only these symptoms develope themselves with frightful rapidity. Here two subdivisions must be established: sometimes the disease is acute from its commencement; sometimes, on the contrary, it becomes so only at a more or less advanced period.

Case 21.—A young man entered the Charité with symptoms of slight enteritis, which soon yielded to proper treatment; at this time no signs of pulmonary phthisis. When about leaving the hospital he caught cold; after a few days, fever, emaciation, alteration of features. Three weeks after, the cough, profuse sweats, such as are observed towards the latter period of phthisis, purulent expectoration, pectoriloquy, and gurgling under the right clavicle; he died the fourth week. An enormous cavity in the upper lobe of the right lung.

Case 22.—This was the case of a young man, eighteen years old, who up to the beginning of March had enjoyed perfectly good health in every respect, except that he complained of pains between the left clavicle and breast. Towards the 6th he caught cold; on the 15th he had great oppression; strength diminished very much; return of the pain beneath the left clavicle; leeches applied to this part; he became worse, and entered the hospital on the 1st of April; at this period he had hectic fever; purulent sputa; loud gurgling all over the left side of the chest; purging; he died the 16th, about five weeks after the appearance of the cough. A number of tuberculous cavities in the left lung.

The next was the case of a man, thirty years of age, who had pulmonary tubercles which, for several years, occasioned the symptoms of the first stage of phthisis. When he entered the hospital, he presented merely the symptoms of pulmonary catarrh; at the end of ten days, however, a cavity was discovered under the right clavicle; he died in eleven days after the cavity was detected.

138. We have several times seen cases of pulmonary phthisis, which had been proceeding more or less slowly, suddenly become very acute, consecutively to an intercurrent pneumonia, a profuse hemoptysis, or even after an acute inflammation of the stomach or of another organ. The critical age in women is also a period during which we often see pulmonary phthisis, which till then had been announced merely by slight or faintly marked symptoms, suddenly change character and take on an acute course. Thus, after the period of from eighteen to thirty-five years, remarked by Hippocrates as that at which phthisis is most common, the critical age seems to us to be, in the case of women, the time when consumption carries off the greatest number of victims, whether then having already manifested its existence for a long time back, it assumes a formidably acute form, or whether it only begins to appear in women, who till then seemed only to have been pre-

disposed to it, or whether, finally, it declares itself in women in whom, till this time, there was no reason whatever to apprehend its invasion.

139. Another form of acute phthisis is that in which the symptoms which it produces are not only remarkable, as in the preceding form, by their rapid succession, but they are no longer those which usually characterise the presence of tubercles in the lungs.

Thus we have seen persons who, having for some time a very slight cough, were suddenly seized with a shivering, followed by violent continued fever, with considerable oppression, and sometimes acute pain in some point of the chest, particularly below one of the clavicles. These symptoms seemed to be particularly those of pneumonia or pleuritis. Several of the individuals in whom these symptoms were observed sunk rapidly, and we found, either at the apex of the lung, or in some other point of this organ, a large tuberculous mass, more or less completely softened, but not yet communicating with the bronchi. Probably, in these persons, the tuberculous mass had now existed for a longer or shorter time in the state of crudity. On the sudden softening the acute character of the symptoms seemed to depend. In other persons, these same symptoms, after appearing at first with such great intensity, became mitigated, and the phthisis resumed its ordinary course.

At other times, the rapid and simultaneous development of a great quantity of miliary tubercles in the lungs was announced only by greater or less suffocation, by a sort of acute asthma.

140. Lastly, there are patients in whom the rapid development of pulmonary tubercles is no longer even announced by any local symptom. These persons have a slight cough, no expectoration, or one purely catarrhal. A remarkable circumstance, their breathing does not appear to be impeded; if the chest be percussed, it is found to be sonorous in every part; if auscultation be employed, the respiratory murmur is heard everywhere loud and clear. However, there exists a continued fever with profuse night sweats; rapid emaciation takes place; and the patients having in a very short time attained the last degree of marasmus, often die before the alteration of the lung has become more manifest. In such cases the mere consideration of the symptoms would incline one to admit the existence of an essential hectic fever, of a nervous marasmus. But the post mortem shows a great number of small crude tubercles developed in the pulmonary parenchyma. The very healthy state of the latter explains why percussion and auscultation yielded no information. The rapid increase in the number of the tubercles accounts, no doubt, both for the fever and the great alteration in the function of nutrition, and the promptness with which death supervenes. But why, in this case, did the breathing remain free, whilst in other cases, absolutely similar with respect to the nature of the alteration and the rapidity of its development, the dyspnœa was the predominant symptom? This great difference of the phenomena, produced by one and the same cause, is, no doubt, very difficult to be explained; but this is in some manner a primary fact, which we constantly find in the study of disease, and from which we shall deduce one of the most important principles of pathology, on which the entire art of diagnosis actually rests, namely, that from one and the same lesion, all things else being equal, the most different symptoms may result, according to the individual. This inconstancy in the connexion between cause and effect, we can account for only by referring it to individual predisposition or idiosyncrasy.

141. The long duration of pulmonary phthisis is oftentimes owing to its taking on a really intermitting course: the symptoms which announce it are seen from time to time to disappear more or less completely, then develope themselves subsequently, then improve to be again reproduced, and so on. Thus this disease presents to us the well-ascertained example of constant lesion, which, by reason

of circumstances more or less appreciable, merely gives rise to some intermitting symptoms. It appears that, during this complete or incomplete suspension of the symptoms, the tubercles remain stationary in their development, and that, by virtue of a sort of habit, the pulmonary parenchyma is no longer irritated by their presence, like other organs, which can bear, without any disturbance of their functions, the presence of foreign bodies. But here, it may be asked, what proves that, in what we call the stationary state of tubercles, the latter bodies really exist in the lung, for most of the symptoms of pulmonary phthisis are sometimes produced by simple bronchitis? First, we might say, that when the latter simulates pulmonary phthisis, it is of long and continued duration, whilst the frequent returns of pulmonary catarrhs, each of which lasts but for a little time, is much more frequently connected with the presence of tubercles in the lungs. True, it might be replied, that these cases of bronchitis are suspended only when there is not yet the formation of tubercles, and that they become continued when once the latter exist. But we shall appeal to more direct proofs, and in order to demonstrate the possibility of the suspension of the progress of phthisis in its different stages, we shall have recourse,—1st, To post mortem examination; 2ndly, to signs which appertain so characteristically to this disease, that from their sole existence we might conclude with certainty that the lung contains tubercles.

1st. *Proofs afforded by post mortem examination.*

Case 23.—A laceman, twenty-nine years of age, having been always meagre and of a delicate frame, was seized with a profuse hemoptysis at the age of twenty-four; this ceased at the end of fifteen or twenty days, but for six months the patient continued to cough; he became more and more emaciated; he was bled several times and blistered. At the end of this time the cough diminished, then ceased, the strength returned, and the patient nearly returned to the same state in which he was before his catarrh, as he called it, and resumed his occupations. At the end of about a year, a second hemoptysis, and reappearance of a new bronchitis, which lasted all the winter and ceased in spring. Two years passed on without any new symptom regarding the chest; only the breathing was habitually a little short, and the muscular system had but little energy. Having attained the age of twenty-eight, the patient had a new pulmonary attack, which did not set in as the preceding attacks, by an hemoptysis; this attack lasted from four to five months, then it ceased again, and as completely as the others.

During the eight months preceding the entrance of the patient into the hospital the cough was gone, breathing free enough, and nothing indicated a morbid state of the thoracic organs. Finally, he was seized with an acute gastro-enterite, not very severe, and entered the hospital; he then gave us the preceding details. Since the commencement of the abdominal affection he began once more to cough; but this cough was slight, and seemed to be but a very secondary symptom. Auscultation discovered the respiratory murmur clear in every part but very strong. (Leeches to the anus; barley ptisan.) Continuance of the fever, redness of the tongue, epigastric sensibility, and diarrhœa during the three following days; then the abdomen became suddenly the seat of an acute pain, which was increased by the slightest pressure; it was hard, tense, and tumefied; the face was pale and the features sharpened; the pulse became extremely frequent; constant vomiting took place; these symptoms of peritonitis increased more and more, and carried off the patient on the fifth day of their appearance.

The post mortem examination discovered in the two lungs numerous very small tubercles of a white or greyish colour, which were surrounded by a very healthy parenchyma. Sero-purulent effusion into the peritoneum; arborescent injection of the mucous membrane of the stomach in its splenic portion, of that of the lower fourth of the small intestine, and of the cæcum; some reddish pustules, with ulceration of one of them at its summit, a little above the ileo-cæcal valve.

In this case, it is very evident that tubercles existed in the lung before the appearance of the acute abdominal affection of which the patient died, and yet he had ceased to cough for some months, and though of a delicate constitution, he was in the enjoyment of good health. It is probable that tubercles commenced to develope themselves in the lungs of this person nearly at the same period at which the first hemoptysis showed itself; it is probable also, that every time they tended to increase in number, and that the process which had given rise to them assumed a degree of activity, the cough, spitting of blood, and the other symptoms of pulmonary phthisis reappeared; they vanished when the process of tuberculisation became stationary. Here, also, in consequence of the nature of the tubercles, auscultation could give no information; let us remark, however, that the great intensity of the respiratory murmur indicated some obstacle or other to the free entrance of the air into the pulmonary vesicles.

2ndly. *Proofs afforded by the signs derived from auscultation.*

Even in the cases where cavities are already formed in the parenchyma of the lung, the progress of phthisis may still be suspended for a longer or shorter time; its general symptoms may disappear, and thus one may see an individual who carries cavities in his lungs return for a time to a tolerable state of health. This we have observed in some cases where the existence of a cavity had been announced at the apex of either lung by a clearly-marked and exactly circumscribed gurgling; the other symptoms of pulmonary phthisis existed in a very high degree. At the end of a certain time the gurgling gradually disappeared, and it was succeeded by a sort of well-marked souffle at each inspiratory movement, as if, during each of these movements, a considerable mass of air entered by a narrow orifice into a large cavity. Where this souffle was heard there was evident pectoriloquy; these phenomena did not depend on induration of the pulmonary parenchyma, for the chest, when percussed, sounded equally well in every part. At the same time that these new phenomena had manifested themselves, the cough became more infrequent, the febrile movement had ceased, the expectoration lost its purulent appearance, both strength and flesh were re-established. What occurred in the lung?

Here we think we must admit, with Laennec, that the parietes of the cavity, lined with a fibrous or cartilaginous membrane, ceased to secrete pus. This is one of the cases in which diagnosis is admirably illustrated by the method of auscultation. If, at the same time, the symptoms of phthisis ceased, we drew this consequence from it, that little or no tubercles existed in the remainder of the lung. But in the majority of cases of this kind, the cure of phthisis is but temporary; for the disposition which already produced tubercles is not destroyed, and it is to be feared that at a later period it may again produce them, or give a new degree of activity to those already existing. This, in fact, is what is almost always observed. We shall return to this subject at another time, when we come to speak of the termination of phthisis; but we could not avoid pointing out just now this tendency of certain cavities to cicatrisation, as being one of the causes under the influence of which pulmonary phthisis, having already reached its last stage, may retrograde, and be suspended for a longer or shorter time.

142. Several manifest causes contribute to interrupt and put an end to the stationary condition of pulmonary tubercles. Such are most of the diseases which attack the lung or even other organs. After a pneumonia, for instance, we see pulmonary tubercles, which till then had manifested their existence only by very equivocal signs, become on a sudden very manifest, and progress with fatal rapidity. Thus the slightest bronchitis is often sufficient to awaken, in a manner, the process of tuberculisation, and to give it an unusual degree of activity. Thus some persons seem to carry about with them the germs of pulmonary phthisis; but it is as yet indicated only by slight symptoms, and does not perceptibly make

progress. An eruptive fever supervenes; a gastro-intestinal inflammation declares itself; and after these diseases well-marked symptoms of pulmonary phthisis appear.

It has been said that under the influence of pregnancy pulmonary tubercles generally become stationary: this fact, which we are far from denying, is not in accordance with what we have observed in nine women who were pregnant and evidently consumptive. In five of them the affection of the lung did not appear to us to have been influenced either favourably or unfavourably by the state of pregnancy; in the remaining four, the phthisis, which was but very little advanced at the time when the first signs of pregnancy manifested themselves, attained its last stage during the continuance of the latter; two of these last women died before they lay in, and the other two a little time after. We do not, however, mean to draw any general conclusion from this small number of particular facts.

CHAPTER V.

CICATRISATION OF TUBERCULOUS EXCAVATIONS OF THE LUNG.

143. Tubercles, when once developed in the pulmonary parenchyma, tend in the majority of cases to become softened, and to make an exit for themselves through the bronchi, leaving behind an excavation of greater or less size, which enlarges by uniting with others. Most frequently these cavities give no indication of a tendency to an approximation of their parietes; the purulent secretion, of which they are the seat, is a powerful cause of the exhaustion of the patient, and at the end of a longer or shorter time, death is the result of their presence in the pulmonary parenchyma. Such is the most general case, that which has been so well described by several modern writers, and on which, consequently, we consider it superfluous to dwell. But in these latter times Laennec has announced that tuberculous excavations of the lung were susceptible of cure, by means of a process of cicatrisation more or less analogous to that which several abscesses, ulcers, or other solutions of continuity present. However, notwithstanding the valuable observations on this subject, published by Laennec, the reality of the cicatrisation of pulmonary cavities is denied by several physicians, or at least placed by them among the number of phenomena not yet sufficiently ascertained. We deem it, therefore, useful to make known the result of our observations on this point. We shall first cite some particular facts; we shall then endeavour to give them that interpretation which we shall consider the most just; whatever may befal the latter, the facts themselves shall not be lost to science.

A. A woman, fifty years of age, died with all the symptoms of pulmonary phthisis. The upper and middle lobes of the right lung presented a red induration, with an admixture of a black colouring under the form of dots, spots, or sinuous lines. In the midst of this indurated tissue there were found some crude tubercles by no means of a large size, and still further, five or six large cavities full of grumous pus, and which probably resulted from the discharge and evacuation of tuberculous masses. The left lung at first seemed healthy through all its extent; however, entirely at its apex, in a space which could scarcely contain a nut, there was observed externally a black colour, great hardness, and evident puckering. Two large bronchi advanced towards this point and opened into a small oblong cavity, with smooth parietes, which could scarcely hold a hazel-nut. The inner surface of this cavity, which was filled by a liquid resembling serum, was lined by a dense cellulo-fibrous membrane ; around it the pulmonary parenchyma was black and hard to the extent already mentioned ; immediately above it there was a visible puckering externally.

The cavity just described seemed to be only the remainder of a larger cavity, as appeared to be fully proved : 1st, by the kind of depression which the lung had suffered above it ; 2ndly, by the manifest want of correspondence between the diameter of the cavity and that of the bronchi which opened into it. We may also remark that this cavity was situated where tuberculous excavations are most usually met.

B. In a man, fifty-two years of age, the two lungs contained a great number of crude or softened tubercles ; the apex of the right lung was hard, black, and puckered externally. On cutting into it, we found at the distance of some lines from its surface an irregularly rounded cavity, large enough to contain a walnut, communicating by a short fistulous opening with a second cavity of a smaller size and crossed by a small band. Both were filled with a sort of reddish serum. To the extent of some lines around these cavities there existed a white homogeneous tissue which was really cartilaginous, and which constituted their parietes. These parietes were also lined by an extremely thin and fine membrane. But what was particularly remarkable, was that three large bronchi proceeded towards the cartilaginous tissue which we have just described ; as soon as they arrived there they became entirely obliterated, and seemed confounded with it. A fourth bronchus having reached the level of the cavities, diminished in size, and then consisted merely of a small canal which opened into the larger of these cavities, whilst the remainder of the bronchus seemed to be in a manner lost in the accidental cartilaginous tissue.

Here we find the same circumstances as in the preceding case, and also an anfractuous form of the cavities, as that of most tuberculous excavations, a cartilaginous tissue of new formation developed around them, and further, what is an important circumstance, five bronchial tubes, of considerable diameter, converging towards two small cavities and becoming in a great measure obliterated in the cartilaginous tissue surrounding the latter. Here, then, is it not extremely probable that at a period more or less remote from that at which we examined the lung, all these cavities had communicated with one or more large cavities, which had gradually diminished, leaving behind, as a trace of their existence—1st, the two small cavities described ; 2ndly, a cartilaginous tissue of new formation ?

C. A man, about forty years of age, died of acute pneumonia. The greatest portion of the right lung was in a state of purulent infiltration. Towards the upper part of the lower lobe of this lung, there was a part where the pulmonary parenchyma was replaced by a white tissue of a fibro-cartilaginous appearance. This accidental tissue occupied a space, the greater diameter of which was in a direction perpendicular to the axis of the body ; it was about two inches and a half in length and two in breadth ; it was closely continued on all sides with the tissue of the lung, except in one point, where it was separated from it by a small oval cavity, occupying less space than the accidental tissue, filled with a purulent matter. Into this point of the lung a large bronchus entered, which proceeded almost directly from the principal bronchial trunk of the lower lobe of the right lung. This bronchus having arrived at the cartilaginous mass partly disappeared, and communicated by the remainder of the canal with the small cavity interposed between a point of the cartilaginous tissue and the parenchyma of the lung. There was no trace of tubercle in the remainder of the lungs.

It may be presumed that if this patient had lived a longer time, the cartilaginous mass would ultimately have taken entire possession of the cavity filled with pus, of which it is probable that we now saw no more than a residue.

D. In another individual whose lungs contained tubercles in different stages, we found in one of the upper lobes a production which was also of a cartilaginous nature, but without any trace of cavity either around it (*C*), or at its centre (*B*). This production presented its great diameter in the direction of the height of the lung; it was about three inches long, and five or six lines in breadth. A large bronchus having reached this cartilaginous mass, suddenly became obliterated at the moment it arrived there, and was confounded with it.

In this latter case, the form of the bronchus was the only sign which led us to admit that a cavity had existed where we now found a cartilaginous mass.

E. Instead of a cartilaginous mass, we found in one case only a mere line, a sort of fibrous intersection; in another case, only a sort of lamina of the same nature, towards which several considerable bronchi also proceeded; when they had reached the point where the accidental tissue existed, their calibre disappeared and they became confounded with it.

This case is entirely identical with the preceding (*D*). The only difference is the form of the accidental production.

F. In lungs which presented several traces of chronic inflammation, with or without the existence of tubercles, we found masses, cellulo-fibrous, fibrous, and cartilaginous intersections, similar to that already mentioned, but differing considerably from it in this, that there were no longer seen bronchial branches becoming confounded with them. Now, in consequence of the absence of this latter circumstance, we cannot draw the same conclusions from the presence of these accidental productions; there is no longer any thing to induce us to suppose that they occupy the place of a cavity, and we may in this case very well admit that they are of a primary formation, just as tubercle or melanosis are formed. In the lungs of horses we have sometimes met similar fibrous or cartilaginous masses, and in them nothing proved, or even inclined us to suspect, that they had replaced a cavity. In several cases, also, these productions have a seat, which it is easy to determine in man, but more particularly in the horse. It is not in the parenchyma itself of the lobules that they are most usually situated, but rather in the interlobular cellular tissue. One may even follow their gradual formation in the latter. Thus in some cases the cellular tissue is merely thickened; it is then more dense and more apparent than in the normal state; the pulmonary lobules are separated from each other by white or grey intersections. In another stage, these intersections exhibit an appearance manifestly fibrous; at other times, in fine, they continually become broader, and from mere lines which they were at first, they gradually form more or less regular masses, fibrous or cartilaginous, which then compress the pulmonary lobules.

G. A man, twenty-four years of age, seemingly in the last stage of phthisis, died two days after his admission.

The two lungs were filled with crude or softened tubercles. Also the apex of the right lung was hard and wrinkled externally, and as it were depressed. When cut into at this point, its tissue presented several black masses, in the centre of which were tubercles of the consistence of plaster. Large bronchi were converging from different points towards this part; and the moment they plunged into the melanosed substance, their calibre became suddenly contracted, their cavity was obliterated, and they seemed to be changed into ligamentous cords.

In this case, as in the preceding, we perceive large bronchi terminating abruptly, by the obliteration of their cavity, in portions of the lung for a long time impervious to air. But, instead of the cartilaginous productions, we now only found some cretaceous tubercles, with black induration around them. We have already mentioned in another article how this sort of tubercle might be considered; several facts then inclined us to admit that their existence announced in a great number of cases the diminution of the size of the tubercles, or at least a stationary condition of these bodies. The coincidence which we here remark between the abrupt obliteration of the bronchial tubes, and the existence of these plaster-like concretions, does it not again strengthen our opinion with regard to the nature of the latter, an opinion which was also entertained by Laennec?

H. In a woman, fifty years of age, we found the following lesions in the lungs:—

Right lung.—A large bronchus coming almost directly from the principal bronchial division of this side, opened into a small cavity lodged in the upper lobe. This cavity, with thin, transparent parietes, of a texture almost analogous to those of the bronchial parietes, was occupied by a cartilaginous, roughened concretion, which was free in this cavity. This mass of cartilages had been at first probably united to the pulmonary parenchyma, from which it was afterwards separated. At a subsequent period it might have been discharged by expectoration, and the parietes of the cavity containing it might have approximated.

Entirely at the apex of this same lung, in the midst of a very hard, brownish, grey tissue, there existed two small cavities, each capable of containing a nut, communicating by a short fistulous passage, and traversed in different directions by thin and reddish bands. Their parietes were lined by a very fine membrane, which was also reddish, and of a cellulo-serous appearance. One of these cavities communicated with a large bronchus. The apex of this same lung presented bands, and a manifest depression.

Left lung.—Its upper lobe was also indurated with an admixture of grey, brown, and black matter. In this lobe there existed an oblong cartilaginous production, somewhat resembling, in form and size, that already described (*D*). A bronchus reached it, and was abruptly obliterated. Not far from this production there existed a small rounded cavity, the parietes of which were formed of a cartilaginous membrane, several lines in thickness; a large bronchus opened into it. In this same lobe, entirely at the apex, a considerable bronchus terminated in a *cul de sac* in the midst of an indurated tissue, without any other accidental production. Was there here only mere dilatation of a bronchus?

Finally, in the interior of the left lung, there were scattered several small rounded masses, of a cartilaginous nature, which had no apparent connexion with the bronchi.

This last case is remarkable, as it presents a combination of most of the lesions which each of the preceding cases showed to us separately; it also exhibits to us the existence of a free cartilaginous concretion in the midst of a cavity into which a bronchus opened.

From the aggregate of the facts now cited, the result appears to us to be that accidental cavities of a greater or less size, having existed at a certain period in the pulmonary parenchyma, these cavities may sometimes diminish perceptibly, and even be completely obliterated. The circumstances of this obliteration have been very well described by Laennec; our observations are only confirmatory of his. The obliteration of these cavities being well ascertained, it may be asked whether they were tuberculous excavations. Now to this question an answer may be given in the affirmative: 1st, because in almost all the cases, the only cavities met in the pulmonary parenchyma are the result of softened tubercles;—2ndly, because almost in all the cases where are found in the lung traces of diminution there·or obliteration of a cavity, there were at the same time tubercles, either in the same lung, or in the other (*A*); 3dly, lastly, because in the cases even wherein the latter were not met, that is probably a further reason for admitting a more easy obliteration of a tuberculous excavation previously existing. It is readily conceived that the latter must tend more naturally to cease secreting pus (a cessation which is the first condition of cicatrisation), in cases where the cause which previously produced the tubercle, to which it succeeded, seems no longer to act, or at least no longer manifests its action by the formation of other tubercles. Besides it is beyond dispute that in certain cases there has been found but one single tubercle in the entire of the two lungs. Recently, again, on opening the body of woman now advanced in years, we met, towards the base of the upper lobe of one of the lungs, near its surface, a single tubercle which was nearly the size of a large nut. Around it the pulmonary parenchyma was healthy.

Whilst we admit that tuberculous excavations may cicatrise, we own that in the great majority of cases this cicatrisation is scarcely of any use to the patients, in consequence of the simultaneous existence of a great number of other tubercles. The obliteration of a cavity can only be advantageous in the case where there was but one tubercle, as we have already instanced; or if, consecutively on the cicatrisation of the cavern, the other tubercles existing in small numbers, and surrounded by a healthy parenchyma, remained stationary in their development. We must not then confound the certain cure of a single tubercle by cicatrisation of a cavity with the cure of the tuberculous affection itself.

In speaking of the progress of pulmonary phthisis, we already cited cases in which are traced the signs by means of which it is possible to ascertain during life that a tuberculous excavation is progressing towards cicatrisation (138).

There are cases, moreover, in which the consideration of the symptoms has been capable of throwing great light on the question before us. We have seen persons who, after having presented all the rational signs of pulmonary phthisis, have yet returned to a good state of health, and in whom the examination of the body demonstrated the existence of some of the states of the lung which we have just passed in review. We shall, in particular, cite the following case :—

A woman died at the age of forty, of a cancerous affection of the stomach. Several years she had all the symptoms of pulmonary phthisis, which brought her life into very imminent danger. However, contrary to the expectation of her physicians, these symptoms gradually disappeared, and her cough entirely left her. During the following years the affection of the stomach began to increase, but she had no cough, and during the last year of her life she presented no symptoms of pulmonary disease. At the autopsy a cancer was found in the stomach.

The lungs were sound through nearly all their extent; their apex adhered to the ribs; they both presented at this part a blackish colour, and remarkable puckering. The apex of the right lung, when cut into, presented beneath the pleura, and to a small extent, an induration of a dark grey colour; immediately beneath this induration, there existed a body of a rounded form, of a cretaceous consistence, adhering on all sides to the parenchyma, which was healthy around it. Near this body, and confounded with the pulmonary induration, there appeared two small tuberculous masses extremely friable and dry.

At the apex of the left lung there was found an induration similar to that of the right lung, with respect to extent and colour; in the midst of the indurated portion there was seen a small quantity of hard tuberculous matter, friable, and contained in a cavity. There was no cretaceous tubercle, properly so called, as on the right.

From this fact several important consequences may be drawn. It proves, first, that a black induration of small extent in the pulmonary parenchyma, with a cretaceous tubercle in the midst of them, may exist without occasioning cough or dyspnœa. But if we go back to the previous circumstances, we shall be led to consider this state of the lung as a vestige of the very serious pulmonary affection which occurred in the patient some years before. It seems to us extremely probable, that where a cretaceous tubercle was found with black induration around it, a much larger tuberculous mass had formerly existed, which, either at the period of its formation, or during the time of its softening, had occasioned the symptoms of phthisis observed in the patient. Whether this mass was afterwards absorbed or evacuated, the cavity which it occupied, collapsing on itself, produced the puckering of the apex of the lung; what remained of this cavity was in some measure moulded on a debris of tubercles which had already undergone a remarkable modification in its physical properties, and which became changed into a calculous concretion.

SECTION IV.

OBSERVATIONS ON DIFFERENT ACCIDENTAL PRODUCTIONS DEVELOPED IN THE LUNG.

When treating in the preceding section of pulmonary phthisis, I had occasion to speak of several of the species of phthisis admitted by Bayle; thus I cited some cases regarding phthisis with melanosis, granular phthisis, and calculous phthisis. Bayle also admitted a phthisis produced by the development of cancerous masses within the pulmonary parenchyma. I have also often found schirrous and encephaloid productions in the lung; but what struck me in the cases of this kind, which I had an opportunity of observing, is, that other similar productions existed at the same time in other parts of the body, so that in these cases the pulmonary lesion itself had not acted the sole part in the production of the symptoms; no characteristic sign had even revealed it amidst the numerous morbid phenomena, which revealed the simultaneous suffering of several organs. The following is a case of this kind :—

Case 1.—*Cancerous masses developed in several organs, and in the lung in particular.* A man, twenty-five years of age, had been for a long time complaining of wandering pains in the limbs, which afterwards settled in the lumbar region. He stated that for nearly a year he was troubled with pains in this region, which increased by walking, by flexing the trunk laterally and forwards, and by mere pressure. These were removed by a large blister applied over the lumbar region. About two months after he began to feel wandering and temporary pains in the abdomen, and great constipation: borborygmi also, nausea, and eructations annoyed him very much. This was in the beginning of January. Towards April there was perceived a tumour to the left of the xiphoid cartilage; this was not painful except when considerable pressure was made on it. The other symptoms already mentioned still continued to torment him: he entered the Charité in the middle of July, and presented the following state :—

Countenance pale; expression of the face natural; muscular strength still retained. The abdominal parietes formed a remarkable prominence to the left of the xiphoid cartilage. There was a hard tumour here; the colour of the skin over it not changed; painful on a little pressure; it extended into the left hypochondrium, and beneath the false ribs of this side, and was continued downwards to within two or three fingers' breadth of the umbilicus, presenting a smooth surface, and an irregularly rounded form.

The ingestion of food not painful; frequent eructations; continual gurgling noise in the belly, principally near the tumour. Obstinate constipation; urine scanty and red, passed with difficulty, and occasioning acute pain in the urethra. The state of this patient continually became worse. The obstinate constipation required the frequent administration of lavements. He died the 20th of August.

Post mortem. Emaciation extreme : the tumour in the left hypochondrium very perceptible. On opening the abdomen, the entire intestinal mass was observed to be of a brownish colour, and a small quantity of serum in the cavity of the peritoneum. Immediately beneath the cartilages of the false ribs of the left side, behind the splenic tuberosity of the stomach, which was pushed forward, there was a large, hard, regularly formed tumour ; it occupied the anterior and left part of the vertebral column, touched the kidney of this side, and passed down nearly as far as the bifurcation of the aorta. Anteriorly, superiorly, and inferiorly it had the stomach, and arch of the colon, which it raised ; still lower down the small intestines, which concealed it from view : on the left the kidney was in contact with it. When cut into, this tumour presented a tissue not very opaque, whence flowed, by pressure, an ichorous serum : it was marked by a number of small red vessels. In the midst of the still hard tissue (crude encephaloid matter), there existed small masses of a yellowish white colour, friable, devoid of cohesion (tuberculous matter). In other parts the tumour entirely softened, presented a substance in every respect resembling in appearance a fœtal brain, in which putrefaction is now commencing. This greyish, inodorous detritus was mixed here and there with effused blood (softened encephaloid matter).

On raising the splenic end of the stomach to look for the spleen, we found an immense pouch, containing a great quantity of liquid blood, like wine lees. When the parietes of the pouch were carefully washed out, they were found to consist of the same sort of substance as the preceding tumour, this pouch being, in fact, an analogous tumour, but more advanced, and softened to a considerable extent. In the transverse fissure of the liver, a third tumour, similar to the preceding, was found. But here the very tissue of this viscus was attacked, and changed into a softened encephaloid substance over a great part of its right lobe. The mesentery contained several lymphatic ganglia hard and diseased. In the urethra the verumontanum was found more prominent than usual : it was hard and schirrous. Two large masses were found in the right testicle.

Chest.—Left ventricle of the heart hypertrophied. At the apex of both lungs a cancerous mass was found, resembling in every respect the tumours in the abdomen, presenting the encephaloid tissue in its two states of crudity and softening, mixed with some tuberculous matter. There two masses were about the size of an apple. They seemed to be developed between the pleura and the lung, the tissue of which did not appear to be at all engorged at this part. Over all the external surface of the two lungs, similar tumours were observed, but smaller in size. In the interior of the lung, cancerous masses were also discovered. Five or six were found in each lung. The size of each was about that of a chestnut. They were evidently formed of encephaloid tissue, hard in some points, and commencing to be softened in others.

We shall now cite a few cases where we found another species of morbid product in the lung, namely hydatids.

144. The cases of hydatids observed in the human lung are still few in number. We thought, therefore, that in a work, the principal purport of which was to collect materials for science, we should detail the small number of facts relative to pulmonary hydatids, which we have observed at the Charité. In so doing we shall be mere narrators ; science does not yet appear sufficiently advanced for us to attempt to establish the etiology of this kind of production, either in the lung, or elsewhere. We desire only to add some facts to those which are already possessed.

Out of about six thousand patients admitted into the wards of M. Lerminier, during the last six years, we saw hydatids developed in the lung only five times, and it must be observed that in one of these five cases it was only from the symptoms that the diagnosis was established. The only hydatids which we met in the lung was acephalocysts. In these cases they were found to be in a cavity in the middle of the pulmonary parenchyma; in a fourth case they filled the pulmonary veins. In the fifth case their particular seat could not be ascertained, death not having taken place.

In one of these cases the acephalocysts were developed in a lung full of tubercles, and their existence was not revealed by any characteristic sign. In two other cases they constituted the only affection of which the lung was the seat, and they produced in one of these two cases the symptoms of a double chronic pneumonia; in the other the lungs did not appear the seat of any lesion during life. Lastly, in the patient in whose pulmonary veins the acephalocysts were found, no other symptoms were observed, except those of an organic affection of the heart, which really did exist.

Thus in none of these cases did the hydatids occasion any specific phenomenon which might serve at another time to make known their existence. This is, also, what is observed in hydatids developed in the different organs. These entozoaire may be produced and acquire considerable size without occasioning any pain, altering the general nutritive function, and without producing any other results than such as arise from their presence in an organ whose parenchyma may be more or less strongly compressed, without its functions being interfered with. Thus we have seen considerable hydatid cysts developed in the liver, without the health appearing to be in any way disturbed. We have also found some in the spleen, which had not been announced during life, by any symptom.

CASE 2.—*Acephalocysts in the lower lobe of the two lungs—Symptoms of chronic pneumonia.*

A middle-aged man entered the hospital in a state of great emaciation. He had a cough for a long time, and his breathing was short. The chest when percussed, yielded a dull sound over nearly all the extent of the thoracic parietes, corresponding to the space occupied by the lower lobe of each lung. On both sides, also, over this same part, the respiratory murmur was not heard. This person died shortly after admission.

The lower lobe of each lung was changed into an immense pouch with thin parietes, constituted of the pulmonary parenchyma pressed back, and lined by a whitish fibro-cellular membrane. Each of these pouches was occupied by a large acephalocyst, which contained two or three other small ones. This hydatid was filled as usual by a colourless liquid, as clear as rock water.

The presence of these hydatids in both lungs, the pressure made by them on the pulmonary parenchyma, clearly account for the symptoms during life.

CASE 3.—*Acephalocysts developed in a lung filled with tubercles, and at the same time in the liver—Symptoms of phthisis.*

The subject of this case died with all the symptoms of phthisis: a great number of tubercles were found in both lungs in different states. On cutting into the middle part of the lower lobe of the left lung, there was observed to flow over the two sides of the blade of the scalpel a purulent, greenish liquid, of some consistence, very different from the matter usually filling tuberculous cavities; it resembled the pus of a phlegmonous abscess. This flowed from a cavity in the middle of the pulmonary parenchyma, large enough to hold a nut. Its parietes, formed of the tissue of the compressed lung, were lined by a layer of concrete pus.—This cavity was entirely filled by a single acephalocyst, which was free in it on all sides.

On the upper surface of the right lobe of the liver, near the insertion of its suspensory ligament, a white spot was observed about twice the size of a five franc piece. This was found to contain a transparent and colourless liquid, like spring water, contained in an acephalocyst, like that of the lung.

CASE 4.—*Acephalocysts in the lower lobe of the right lung—Respiratory murmur stronger on this side; no other sign of a pulmonary affection.*

A woman, forty-five years of age, died of cancer of uterus. During the last two months of her life she presented no symptom of pulmonary disease. The respiratory murmur was louder in the right lung than in the left; this inequality of the respiratory murmur was sufficiently striking to attract our attention. We were at a loss to know whether the alteration existed on the side of the chest where the respiration was weaker, or on the other. The post mortem showed us in the right lung, that in which the respiratory murmur was loudest, an acephalocyst, the size of a large nut, which contained several other smaller ones.

A sort of supplementary respiration appeared to have been set up in the lung of this patient, as a small portion of it being pressed on by the hydatid cyst had become impervious to air, or probably there existed here a shade of the bronchial respiration.

CASE 5.—*Acephalocysts in the pulmonary veins—Aneurism of the heart.*

A man, about fifty-five years of age, had been badly fed for the year previous to his entering the hospital, and had been suffering under great mental distress. During his stay in the hospital he presented nothing but the ordinary symptoms of an affection of the heart; its pulsations were loud, but without impulsion, all along the sternum and under the two clavicles; pulse natural; face swollen and violet-coloured; infiltration of the limbs; orthopnœa; over several points of the chest some moist bronchial râle was heard, and in other points total absence of respiration; the dyspnœa, however, increased, and he died in a state of asphyxia.

The two lungs were filled with hydatids. We thought at first that they were seated in the parenchyma itself; but a more careful dissection revealed to us a fact which has but few like it in the annals of science, namely, the existence of hydatids in the pulmonary veins.

Several of these were lodged in pouches with a smooth surface, which at first seemed to be so many cysts. Others of them, empty and rolled several times on themselves, were contained in narrow canals, the elongated form of which they assumed. The inner surface of these canals was smooth, like that of the great pouches; they ramified like vessels. We soon ascertained that at each pouch a vessel terminated, of small calibre, which to form it underwent greater or less dilatation. We then dissected the pulmonary veins at their entrance into the heart, and we traced them into the lung; when we had come to their almost capillary divisions, we began to perceive several of them present a considerable number of enlargements which were filled with hydatids. After being thus dilated, the vein resumed its original calibre; then, a little further on, it was again dilated. The largest of the pouches might have contained a large nut, and the smallest would admit a pea. They existed equally in both lungs. The hydatids which they contained had all the characters of acephalocysts; several presented small points of a dull white colour in their substance; others presented on their inner surface a great number of miliary granulations. Most them of were burst. Around them the pulmonary tissue was in several points healthy and crepitating; in other points it was infarcted and even hepatised.

A vast hydatiferous cyst with cartilaginous parietes, capable of containing a large orange, was found in the liver; eight to ten acephalocysts were included within it. This is the second time we detected the simultaneous existence of hydatids in the liver and in the lung.

The right cavities of the heart were considerably dilated, and the parietes of the right ventricle a little hypertrophied.

The presence of so great a number of hydatids in the pulmonary veins must necessarily have occasioned considerable embarrassment to the circulation. Did it contribute to the great dilatation of the right cavities of the heart?

CASE 6.—*The debris of acephalocysts expectorated—Hemoptysis.*

A man, twenty-eight years of age, had a cough now four months, when he entered the Charité. Since then he had several attacks of hemoptysis; he felt an habitual pain beneath the left breast. We found him in the following state:—

Countenance pale; breathing short; cannot lie on the left side on account of the pain. Cough frequent; sputa consisting of an opaque and greenish mucus; resonance of the chest equal in all points; bronchial râle posteriorly on both sides; apyrexia. There was every reason to apprehend here the existence of pulmonary tubercles. The third day of his admission he expectorated a large fragment of membrane rolled on itself, having the characteristic appearance of the tissue of acephalocysts. This membrane, when unrolled, was nearly the size of the palm of the hand. Thus it is evident that it was not formed in the bronchi. It could come only from a tuberculous cavity, or from a cavity inclosing an hydatid cyst, of which the preceding cases afforded us instances. The latter opinion seemed the more probable. On the following days the patient spit a considerable quantity of blood; copious venesection was employed and the hemoptysis ceased, and the patient, finding himself better, wished to leave the hospital.

This case may be added to those contained in authors on the expectoration of hydatids. It is easily conceived that their total expulsion may be followed by a cure, provided the disposition which gave rise to them may not reproduce others, and that they are not complicated with any other affection of the lung, as was the case of the individual who formed the subject of our third observation, and provided also that the cavity which lodged the hydatids, instead of becoming obliterated after the expulsion of the latter, is not transformed into an incurable ulcer, a thing which is possible.

SECTION V.

OBSERVATIONS ON PLEURITIS.

145. It is more usual to meet pleuritis alone, without being complicated with pneumonia, than to meet pneumonia without pleuritis: the latter case is so rare that we thought it right to designate by the generic term, pleuro-pneumonia, all the inflammations of the pulmonary parenchyma, of which we have given examples in the preceding part. On the contrary, the diseases of which we shall treat in this section shall be all cases of pleuritis not complicated with pneumonia. For the rare cases where this complication shall exist, we shall adopt the term *pneumo-pleuritis*. Many ages have been necessary in order to acquire the simple and accurate ideas now possessed regarding the nature and seat of pleuritis; truth seemed in this case so easily found, that one can scarcely conceive how this affection could be the object of such long and such interminable discussions. In vain did Aretæus, emulated by Paulus of Ægina, and Alexander of Tralles, assign to pleuritis its real seat; their successors, little versed in the

cultivation of anatomy, returned to the ancient opinion of Hippocrates; they confounded inflammation of the pleuræ with that of the pulmonary parenchyma, and often attributed to one of these diseases that which belonged exclusively to the other. Thus the rust-coloured and viscid sputa of pneumonia were for a long time considered as equally characterising pleuritis. Up to a period very near our own time, physicians are seen to be uncertain whether the acute pungent pain of pleuritis is not rather the result of inflammation of the pulmonary tissue; and yet, many ages before, Aretæus had positively stated that the pain, very acute in pleuritis, is none in pneumonia. The possibility of separate inflammation of the lung and its investing membrane was a long time doubted; and after sharp discussions this possibility was only well established by the observations of Diemerbrock and Frederic Hoffman. If we run through the *Sepulchretum Anatomicum* of Bonet, we shall be surprised at the crowd of strange ideas and erroneous opinions regarding the nature, causes, and effects of adhesions of the pleura. The physicians contemporary with Morgagni placed these adhesions among the causes of sudden death, and this great man dedicated a considerable portion of his immortal work to refute this error, which was already combated by the systematic Van Helmont. This latter physician entertained such incorrect ideas regarding the nature of pleuritis, that he considered bleeding a fatal remedy in this disease. It is known that this celebrated enemy of blood-letting seems himself to have died of an effusion into the pleura, in consequence of a pleuritis which he refused to combat by bleeding. Almost in our own times, Stoll, who shed such a light over the diagnosis of latent pleuro-pneumonia, appears not to have had ideas always clear and precise regarding the symptoms of pleuritis. This inflammation, as all those of serous membranes, has been accurately understood only since the birth of general anatomy. Several contemporaneous authors have already published a great number of accurate observations calculated to throw considerable light on the diagnosis of pleuritis. What physician has not read with advantage the valuable observations on this subject, contained in M. Broussais' *Traité des Phlegmasies Chroniques?* What physician has not also studied the still more accurate observations on chronic pleuritis, published by Bayle in his classic work on pulmonary phthisis? But since the publication of these works and several others, the bounds of science have been extended; the diagnosis of pleuritis, as that of all diseases of the chest, has been very much modified, illustrated, and perfected by the immortal discovery of the method of auscultation. Science in its present state seems then to call for new observations, which, tracing with exactness the symptoms of pleuritis according to the new means of exploring it, may confirm or invalidate the utility of these latter, and thus supply the deficiencies which must necessarily be presented by the observations on pleuritis published before Laennec's work. Such is the object of the cases and observations contained in this section.

The most striking difference existing between cases of pleuritis consists in the presence or absence of effusion. Pleuritis without effusion, not severe unless when very extensive, already received our attention when we spoke of pneumonia, this latter affection being almost always preceded or accompanied by an inflammation of the pleura, which very rarely terminates in effusion. We shall give here but a very few cases of this *dry* pleuritis, if I may so call it. We shall then run through the different varieties which pleuritis with a collection of fluid presents, according as it is acute or chronic, manifest or latent, limited to one side or extended to the two pleuræ, general or partial, simple or complicated.

CHAPTER I.

PLEURITIS WITHOUT EFFUSION.

CASE 1.—A mason, twenty-nine years of age, of a strong constitution, and always in the enjoyment of good health, felt a shivering on the morning of April 10th; the remainder of the day he was ill, yet continued his work as usual. In the night he was seized with an acute pain of the side below the right breast; the next day he coughed without expectorating; pain increased by deep inspirations. On the evening of the twelfth, he was taken into the hospital and bled, and the following day he presented the following state :—

Face flushed; lies on his back; acute pain below the right breast, increased by cough, by the inspiratory movements, by percussion, and by intercostal pressure; cough frequent and short; expectoration that of acute bronchitis; breathing calm enough in the horizontal position, but short and panting when the patient sits up; percussion on every part sonorous; respiratory murmur in general weaker on the right than on the left; pulse hard, and of moderate frequency; skin hot and dry (this dryness observed from the onset). Tongue natural, thirst, abdomen free from pain, constipation. (Bleeding to twelve ounces; fifteen leeches to the side affected.) Blood cupped, and covered with a thick buffy coat, surrounded with a great quantity of serum.

Fifth day: the pleuritic pain no longer felt, except on making deep inspirations; the respiratory murmur heard equally well in every part; pulse still frequent, no perspiration; venesection to eight ounces prescribed; it presented but a very thin buffy coat, covering a large clot.

Sixth day: the pleuritic pain entirely gone; the patient sweated during the night for the first time: scarcely any cough, fever gone; and on the following day he was quite well.

This case presents, in a manner, the type of slight pleuritis without effusion. All the symptoms characteristic of this disease were found here combined; namely, the pain of side preceded by shivering, the cough, without any other expectoration save that of catarrh; the sonorousness of the thoracic parietes still retained; the respiratory murmur weaker on the affected side, in consequence of the unequal dilatation of the thorax; fever, with hardness of the pulse; and, lastly, the buffy appearance of the blood. With respect to the mode of lying in the bed, it was not such as is mentioned in all authors; it was on the back, and not on the side opposite to the seat of the pleuritis. The skin remained constantly dry up to the moment when an amendment took place; then perspiration came on. The crisis came before the sixth day. The active antiphlogistic treatment employed exercised, no doubt, a powerful influence on this prompt and favourable termination. However slight cases of pleuritis may be, they should be attacked from their onset by copious blood-letting. If influenced by the mildness of the present symptoms, we meet the disease by a treatment not sufficiently active, we have too often occasion to repent of it, either because an effusion supervenes, or the inflammation of the pleura, from having been neglected, extends to the pulmonary parenchyma.

CASE 2.—A woman was employed in washing linen, at a river, for several successive days during the month of February, in consequence of which she was seized with an acute pain below the right mamma; on the third day she entered the hospital. She then breathed with difficulty; inspirations short, as if arrested by the pain; the latter, very acute, was also increased by motion, percussion, and cough; expectoration none; pulse frequent and hard; skin burning and dry. The respiratory murmur a little weaker on the right side. (She was bled, and leeches were applied to the affected side.)

On the fourth day the breathing was somewhat more free, and the pain less; in other respects her state was the same. On the morning of the fifth day, the dyspnœa and pain were considerably increased; no sign had yet announced that effusion had commenced into the pleura. The patient was in a state of great anxiety; she complained of a weight and burning heat in the lumbar and inguinal regions. She was bled again; we scarcely left her when she was attacked with profuse uterine hemorrhage. According as the blood flowed, the patient found herself evidently relieved. She lost a considerably quantity of blood. In the afternoon the breathing became free, the pain was diminished, and the pulse was almost natural; in a word, this woman had passed in a few hours from a very alarming state to a state of convalescence. She soon recovered.

The most remarkable circumstance in this case is the manner in which the disease terminated. We find but few instances in authors of uterine hemorrhage proving so critical. Before its appearance, an evident exasperation in all the symptoms was observed, and scarcely had the hemorrhage set in when an evident amendment was perceived. Care should be taken not to confound uterine hemorrhages of this sort, which are truly critical, with the simple menstrual flux, which has been often considered as bringing on a crisis in several diseases. It is evident that in most cases this discharge does not appear till after the crisis is already established. Again, in many affections it is not the suppression of the menses that causes the morbid state, but it is the latter which suppresses the menses.—Thence the inutility of endeavouring to bring on the menses as long as this morbid state continues. This is observed, for instance, in pulmonary phthisis.

CHAPTER II.

PLEURITIS WITH EFFUSION.

Case 3.—A mason, thirty-six years of age, felt without any known cause general illness. This was on March 21st. In the course of this night he was seized with an acute stitch in the side, below the right breast. On the 23rd he had some cough, and on the 24th he kept his bed, and entered the Charité on the evening of the 25th. There was then great dyspnœa; he could not inspire without feeling acute pain on the right side, which pain was also increased by percussion and coughing. The chest, when percussed, sounded less perfectly on the right side posteriorly; on this part, also, the respiratory murmur was very weak, and the patient's voice presented a sort of tremor (*chevrotement*), not to be found in the other parts of the chest. The cough was very frequent, and without any expectoration, pulse feverish, skin hot and dry. (Twenty-four leeches were applied to the right side of the chest.)

The next day a very remarkable amendment took place; the breathing, much less embarrassed, was heard equally distinct in every part. On the right there was neither dulness of sound, nor tremor of the voice. The pleuritic pain was now very inconsiderable. There could be no doubt but that the slight effusion which existed in the right pleura was absorbed. No sweat, nor any other critical phenomenon had taken place. However, the pulse retained its frequency. This symptom, and the dull pain which still continued, seemed to announce that the resolution of the inflammation was not yet complete. (Twenty leeches more applied to the side.)

On the night of the 26th, profuse sweat for the first time. In a few days more he was perfectly convalescent.

This disease marks in some degree the transition of pleuritis without effusion to pleuritis with effusion. Undoubted signs announced the existence of a collection of liquid in the pleura; this collection was not considerable; there was rather a diminution in the sonorousness of the chest than positive dulness of sound; the respiratory murmur was still heard, though weaker, and there was evident ægophony. Under the influence of one application of leeches, the inflammation retrograded, and in twenty-four hours the effusion was absorbed. Still the inflammation was not completely resolved before the sixth or seventh day, and after the appearance of a profuse sweat. It was then only the pulse lost its frequency.

Case 4.—A servant man, twenty-four years of age, of rather delicate frame, residing in Paris only for the last six weeks, felt, on the 16th of March, 1822, without any known cause, a pain in the side, under the left breast. This continued for the following days: he did not pay any attention to it, and continued his usual occupation till the 22nd. Then the pain was become more acute, cough dry, great oppression. On the 23rd he entered the hospital, and was bled.

On the 24th countenance pale, expressive of great anxiety; inspirations short and frequent; oppression; cough dry; pain below the left breast increased by percussion, by intercostal pressure, by cough and inspiratory movements; decubitus on the right side. Dull sound on the left posteriorly and laterally; respiratory murmur none, where the sound was dull; weak on the left anteriorly, very loud every where else; no ægophony. Pulse of moderate frequency; sweat general over the body; tongue whitish; constipation. This group of symptoms announced an effusion into the left pleura, which probably had commenced since the 22nd; it was now too great to allow ægophony to be heard. (Venesection to twelve ounces: twenty leeches to the left side. The blood flowed but slowly: it presented a large clot, not buffy.

25th. Total disappearance of the pain of side; decubitus on the back: his state the same in other respects. (Venesection to eight ounces; purgative lavement, &c.)

26th. A large blister over the left side.—27th. Breathing less embarrassed; patient better; ægophony heard for the first time on the left, on a level with the inferior angle of the scapula. A very great quantity of serum flowed all the day from the blistered part; profuse sweat towards night.

From the 28th of March to the 4th of April, the ægophony continued: the dulness of sound diminished, and the respiratory murmur began to be heard, but much weaker than on the right. The breathing appeared but little impeded; pulse not frequent; the general state very good. Sweats had taken place every night.

On the 4th of April the pulse no longer frequent; was allowed a small portion of food for the first time. On the day after, the breathing became more embarrassed, and the pulse more frequent: the allowance of food was discontinued; on the 6th every thing returned to the same state as it was on the 4th.

The night sweats now ceased, the strength returned, and the patient was soon able to get up and walk. After the 12th ægophony was no longer heard, and he now felt only a slight oppression. Sonorousness of the chest equal in every part; still the respiratory murmur was weaker on the left than on the right. Was it because there was still a little liquid effused, or was it that, by a sort of habit, the left side of the chest dilated less than the right? The patient left the hospital on the 28th of April.

The signs furnished by auscultation here announced, with great precision, the increase, then the diminution, and, finally, the total disappearance of the collection in the pleura. When we first saw the patient, the total absence of the respiratory murmur, the great dulness of sound, indicated that a great quantity of liquid was interposed between the thoracic parietes and the pulmonary parenchyma. Then, too, no ægophony was heard. At a later period we began to hear the respiration in the left side a little; the other symptoms indicated at the same time that the effusion was diminished; then some ægophony manifested itself. Finally, after the disappearance of the latter, and when every thing announced the entire absorption of the liquid, the respiratory murmur continued for some time weaker on the left than on the right.

The onset of the pleuritis in this case also merits our attention. The patient at first felt but a slight pain, unaccompanied by any other alarming symptom; it was after it had continued thus for some days that it suddenly became exasperated, and all the signs of real pleuritis developed themselves.

The sort of relapse which had been occasioned by allowing some nourishment to the patient, and that at a time when the absence of fever seemed to warrant it, points out the necessity of observing strict regimen as long as the inflammation, though diminished, still continues.

Case 5.—A currier, twenty-five years of age, of strong make, having a broad and well-developed chest, had always enjoyed good health. On the 12th of July, he felt a slight pain below the left breast, without any other morbid symptom. On the 13th, this pain was gone. From the 13th to the 24th, it appeared and disappeared without at all inconveniencing him, but on the 24th it returned with much more severity; at the same time there was cough and dyspnœa. These symptoms continued on the 25th and 26th. Eight leeches were applied to the side. He entered the Charité on the 27th, and on the 28th he presented the following state:—

Slight oppression; could lie indifferently on either side, but preferred to lie on his back, because in this position he coughed less. The pain no longer appeared except when he strove to cough, and in making deep inspirations. Cough dry; inspiratory movements short and frequent; pants a little when he speaks. Inferiorly on the left the sound was dull, and the respiratory murmur gone; no ægophony. Pulse frequent; skin hot and dry. (Twelve leeches to the left side.) On the 29th, same state. (Bled to twelve ounces.)

30th. Dyspnœa increased; extreme anxiety; the patient, lying on his back, complained of an insupportable weight which prevented the dilatation of the chest. On the left the sound was dull, both anteriorly and posteriorly, as far as the level of the third rib; on the right and left the respiratory murmur was distinctly heard only in the supra-spinous fossa, and immediately below the clavicle; lower down, on both sides, different varieties of the bronchial râle were heard (mucous râle in some points, sibilous or snoring râle in others). On the left, laterally and posteriorly, we heard for the first time manifest ægophony; fever still continued. (Thirty leeches to the left side; ptisan de violette gommée, &c.)

The patient felt great relief from the application of the leeches; the pain disappeared completely. In the night he had for the first time a profuse sweat; he coughed and expectorated much mucus; he slept tranquilly.

On the 31st, the breathing was much easier; pulse had but slight frequency. The patient, lying on the right side, expressed how much better he felt; the ægophony was no longer heard; the dulness, however, was not diminished; auscultation afforded the same signs.

On the 1st of August, the sound had returned anteriorly from the clavicle to the level of the breast, and posteriorly as far as the middle of the infra-spinous fossa. Over this same extent the respiratory murmur was distinct, but much weaker than on the right; lower down, as well anteriorly as posteriorly, the sound was very dull, and the respiratory murmur almost none; no trace of ægophony. The effusion, though evidently diminished, was still considerable, and still there was complete apyrexia; the oppression was very slight; rather severe fits of coughing, excited by the least motion, frequently tormented the patient. (Demulcent drinks, &c.)

The six days following, the condition of the chest remained stationary; however, the strength returned rapidly, the appetite was excellent; the apyrexia was complete during the day; but every evening the pulse became a little accelerated, and profuse sweats every night. The quantity of aliment was not increased.

On the 8th of August, a blister, six inches in diameter, was applied over the left side.

On the 10th, the ægophony was again heard. Up to the 19th, the dulness of sound diminished progressively, and the respiratory murmur began to be heard a little over all the left side. The general state was excellent. The patient felt no oppression; he no longer coughed, and, thinking himself completely cured, he bore the blister very impatiently; a very small allowance of aliment was given him. On the 19th, the ægophony ceased to be heard, though the sound was still a little less on the left, and the respiratory murmur was weaker. We had considerable difficulty in preventing the patient from leaving the hospital at this time. It was not till the 26th of August that the equality of the sound, and of the respiratory murmur on both sides, indicated the complete absorption of the effusion. The blister was then allowed to heal, and the patient left the hospital.

The pleurisy was first indicated in this individual by one of those transient fugitive pains which seem seated particularly in the muscles of the thoracic parietes. At the end of thirteen days, this pain became suddenly aggravated, fixed, and permanent, and from thenceforward was accompanied with all the symptoms of acute pleuritis. If, on the 24th of July, a large bleeding had been employed, probably the inflammation would have been checked, and the effusion would not have taken place. Be that as it may, this effusion was considerable at the time of the patient's admission. There was then dulness of sound, and absence of the respiration in about the lower half of the left side of the chest. Two days after there was manifest increase of the effusion, and, what is remarkable, the ægophony was then heard for the first time; it was no longer found on the following day; then it reappeared at a later period, when the effusion was now perceptibly diminished; finally, it again ceased to be heard before the complete re-establishment of the sound and of the natural respiratory murmur.

We shall carefully note the different bronchial râles which, at a certain period of the disease, were heard on the left side, notwithstanding the effusion; we shall also note the gradual manner in which the respiratory murmur was re-established, according as the effused liquid was absorbed.

At a time when the collection was still considerable, there was no longer either cough, dyspnœa, or fever; strength good, appearance of the countenance excellent, and what cannot be too much dwelt on, one would then have looked on the patient as convalescent, without the signs afforded by percussion and auscultation. It was these signs that made M. Lerminier keep the patient on a strict regimen, notwithstanding the apyrexia. However, the effusion did not diminish; so that, in this case, nature, left to herself, seemed insufficient to effect the cure. It was then a very large blister was applied over the chest; the patient appeared to be in the most favourable condition for the success of this treatment. Accordingly, a little time after its application, the effusion began to diminish; it was not till after the complete absorption of the fluid that the blister was allowed to heal. Up to this period the patient took but very little aliment. This severe regimen seconded very much, no doubt, the action of the blister. Notwithstanding this long privation of food, the effusion was scarcely absorbed, when the patient recovered strength and flesh with astonishing rapidity.

Nearly a month elapsed between the commencement of the effusion and that of its total absorption.

Case 6.—A man, twenty-seven years of age, of a sanguineo-lymphatic temperament, fatigued himself very much on the morning of the 24th of August, and exposed himself to a current of cold air whilst he was in a perspiration. In the night he felt some headach and a little shivering. On the night of the 24th, he awoke with an acute pain below the left breast; this pain continued all the day. The patient kept his bed; in the night he began to cough. On the 26th, the pain had not diminished; he then consulted a medical man, who merely recommended him some demulcent mixture. On the 27th, two grains of tartar emetic were given to him;—copious bilious vomiting, and several stools;—he felt himself considerably relieved during the day; the pain of the side was lessened, the cough became lighter, and the breathing more free. Thinking himself nearly well, he strove to get up on the 28th, but, alarmed at his weakness, he lay down again, and entered the Charité on the 29th of August. From the invasion of the disease up to the present period profuse sweats took place every night.

State on the 30th:—Pain no longer felt except during the cough, by percussion, or by simple pressure; cough light and dry; breathing short and hurried; deep inspirations were painful and brought on cough; the patient remained half sitting up in the bed; lying down considerably increased the dyspnœa. Over all the right side the sound was very clear, and the breathing loud and distinct; on the left, posteriorly and laterally, from the fifth rib down, the sound was very dull, the respiration none, and ægophony doubtful; higher up on this same side the sonorousness reappeared, but the respiration was heard to be much weaker than on the right; it was the mechanical result of the compression to which the lung was subjected, and which only allowed the ingress of a smaller quantity of air in a given time. Pulse not frequent but hard; skin moist and not hot; tongue covered with a white coat; anorexia; thirst; no stool for the last three days.

Diagnosis; *pleurisy on the left side which has terminated in effusion.* To prevent the latter from increasing, and to favour its absorption by diminishing the inflammation, such appeared to be the indication to be fulfilled. (Venesection to sixteen ounces; forty leeches over the left side; demulcent mixture.)

Under the influence of this treatment, the dyspnœa became less in the day; in the night there was an increase of fever. The blood taken from the vein was not buffed.

On the 31st, the ægophony, doubtful the preceding day, was now evident. (Two blisters to the legs.)

Sept. 1st. The pain of side entirely gone; perspiration at night; fever and constipation. (Purgative lavement.)

From the 2nd to the 6th, the symptoms of the acute state disappeared gradually; the skin lost its great heat; the pulse became less frequent and softer; but every evening there was a well-marked febrile accession and perspiration at night; the breathing, which was free enough when the patient kept himself at rest, was very much hurried when he sat up or spoke; he lay on his back. Auscultation and percussion yielded the same information; ægophony continued to be evident; thus the effusion did not appear to have increased since the patient's entrance, neither had it diminished; the pleuritis appeared to have a tendency to pass into the chronic state. In this state of things, M. Lerminier covered the left side with a very large blister, and at the same time he tried to keep up a constant diaphoresis by means of Dover's powder (fifteen grains in three doses).

After the application of the blister the breathing became more and more free, the fever diminished, the night sweats did not cease. Towards the 15th, we began to hear the respiration very feebly posteriorly on the left, where some days before it was completely null. On the 18th, we found the pulse for the first time entirely free from frequency ; the patient found himself very well ; he arose from bed without experiencing any dyspnœa ; he eagerly asked for food ; a very small allowance was given him. The frequency of the pulse did not return on the following days. On the 22nd, the respiration was heard a little louder on the left posteriorly ; there was no ægophony. The patient now determined to leave the hospital.

On the 26th, we examined his chest again : the sound was still dull on the left posteriorly and laterally, from the last ribs to a little above the inferior angle of the scapula ; over all this space the feebleness of the respiration contrasted with its strength in the other points of the chest ; the effusion was far then from being entirely absorbed. In other respects the state of the patient was very satisfactory. He went out on the 27th.

We may remark in this case, what we have already endeavoured to show in several others, the difference of the symptoms which mark the existence of a pleuritic effusion according to the length of time the disease has existed, the quantity of liquid effused being the same. Thus at the commencement the most serious symptoms manifest themselves ; acute pain of side, extreme difficulty of breathing, intense fever, general anxiety carried to the highest degree. In this state of things, nothing is easier than the diagnosis of such a disease ; but at a somewhat later period these very acute symptoms are moderated, and partly disappear ; the dyspnœa, less urgent, is only felt when some change in the habitual state of the patient, occasioned by an unusual movement, by the introduction of food into the stomach, by some mental excitement, etc., momentarily accelerates the motion of the blood ; the skin loses its burning heat, and soon a slight acceleration of the pulse is the only sign that announces that the circulation has not yet returned to its normal state. When patients have arrived at this stage, they complain only of a want of return of strength, and they fancy that they are just on the eve of convalescence. The physician himself, if he were not enlightened by percussion and auscultation, would often participate in this hope. At a later period still, the pulse completely loses its frequency ; the strength returns ; walking, the effect of speaking, etc., no longer occasion any dyspnœa ; it then seems that the lung which has remained sound has acquired an increase of action and of life, which renders in some degree useless the functions of the lung which is compressed by the effusion. But, at this time, if the chest be again percussed, if we examine the respiration with the stethoscope, we find that the effusion is not yet completely absorbed ; it is then that the strict observance of hygienic rules is of the utmost importance to the patient ; if he submit to them, we may hope that the effusion will be gradually absorbed ; if he neglect them, a relapse will soon supervene, the inflammation of the pleura will pass once more to the acute state, and will become more or less rapidly fatal.

We could observe these different phases in our patient ; we saw that the treatment was modified in each of them. Whilst the symptoms were at their highest stage of the acute state, they were combated by copious blood-letting, general and local. A blister was applied over the chest, the action of the skin was called forth by Dover's powder, when the disease began to pass to the chronic state, and when general reaction was no longer to be dreaded. We shall not forget to note the temporary relief which followed the taking the two grains of tartar emetic by the patient before entering the hospital.

CASE 7.—*A pleuritic effusion consequent on the opening of a tuberculous excavation into the pleura.*

A man, twenty-five years of age, entered the hospital with all the symptoms of pulmonary phthisis (frequent attacks of hemoptysis for the last two years; habitual cough since the same period; oppression; gradual diminution of strength and flesh). The chest sounded equally well in every part. On the right the respiratory murmur was strong and clear; on the left, anteriorly and posteriorly, it was marked in different points by a râle or noise similar to that which is made by blowing with a pipe into soap and water. There was no evident pectoriloquy. Diagnosis: tubercular excavations in the left lung; pulmonary tissue healthy around them; during the fifteen days following the patient presented nothing new. At the end of this time we found him one morning lying on the left side, breathing with much more difficulty than on the preceding days, and not complaining of pain in any particular point. The chest, when percussed, yielded a dull sound on the left posteriorly; instead of the respiratory murmur, the sound already described was heard over this same extent; the voice had a particular resonance. The pulse was small and frequent; face pale and covered with sweat. (Blister over the left side.)

The three days following the dyspnœa increased; rapid emaciation; features very much altered; lies constantly on the left side, notwithstanding the blister; death.

Post mortem. A pint of sero-purulent fluid in the left pleura. False membranes of recent formation covered the entire surface of the lung, the size of which was little diminished. When the false membranes were removed, we discovered on the external surface of the lung, a little above the interlobular fissure, an opening with rounded and flat edges, being from two to three lines in diameter. Through this opening was observed a cavity formed in the pulmonary parenchyma. A sound introduced into a bronchial division readily passed out through this opening. By cutting along the course of the instrument, we were satisfied that it penetrated into a large bronchial tube which opened into an immense cavity, over the external wall of which the opening had been formed. After this the cause of the pleuritis was no longer doubtful. In this same lung were other tubercles, several of which, being softened, already formed small cavities. In the intervals between them the pulmonary parenchyma was healthy. The right lung contained but a small number of tubercles still crude.

Pleuritic effusions, owing to the communication of a tuberculous cavity with the cavity of the pleura, are not very uncommon. Acute pleurisy, more or less immediately fatal, is the ordinary result of them. In the case now before us, the absence of pain is a remarkable circumstance. The effusion was not considerable, for we heard a variety of ægophony; neither did the effused liquid prevent the cavernous râle from being heard.

It is not very uncommon to meet in phthisical patients tuberculous excavations, the external wall of which is formed solely, to a greater or less extent, by the pleura, thin and transparent as in the healthy state. In this case we can readily conceive the possibility of this membrane being ruptured, and thence the production of a pleuritis.

It is not only in the case where large cavities exist that we have seen effusions supervene owing to the openings of these cavities into the pleura. We found a similar effusion in an individual whose lungs contained at the very utmost but five or six small tubercles. But one of them, about the size of a hazel-nut, developed immediately beneath the pulmonary pleura, and already softened, occasioned its perforation.

In most of the cases where pleuritis results from the opening of a pulmonary cavity into the pleura, there is at the same time pneumo-thorax.

CASE 8.—*Pleuritic effusion formed by blood.*

A man, forty years of age, brown skin, and apparently of a strong constitution, had enjoyed good health up to the commencement of January, 1822. He then began to cough; but for a month this did not prevent him from attending to his usual business; his health did not seem changed; at the end of a month he was seized with a severe pain of the side, on the level of the right breast, at the same time there was oppression and fever. Having entered La Pitié, he was bled six times in six weeks. At the end of this time he left the hospital, still retaining a very slight cough and a little dyspnœa. Wishing to resume his occupation, he again felt the pain of side, coughed more, and entered La Charité the 24th of April. He then complained of a pain all over the inferior lateral part of the chest on the right side, which was increased by inspiration and by cough. The breathing was short, he panted a little when speaking; could lie in any position; expectoration was catarrhal. The chest, when percussed, yielded a very dull sound on the right side posteriorly and laterally; on the same side, posteriorly, on the level of the five or six first ribs, a very loud crepitous râle was heard; lower down nothing was heard. There was neither ægophony nor any resonance of the voice which could simulate it. The right side of the chest, when measured, appeared greater than the other by four or five lines. The pulse was frequent; skin free from heat; the patient had never either shivering or sweat. Bad taste in the mouth; anorexia; constipation. The existence of an effusion into the right pleura did not appear doubtful. The patient was very weak and exhausted. A large blister was applied over the right side.

His state continued the same during the four days following. On the 29th, the features were very much altered since the preceding day; the patient for the first time expectorated purulent sputa, which seemed to come from a tuberculous mass. On the 30th, he was scarcely able to pronounce a few words in a low voice; intelligence intact. On the 1st of May he was dying. He had expectorated a small quantity of fetid ash-coloured sputa. He died in the night. Constipation continued till death.

Post mortem. The right pleura presented an immense cavity, the upper wall of which, situate on a level with the fourth rib, was formed by the upper lobe of the lung, which was kept fixed to the ribs by thick false membranes. This cavity was filled with a liquid of a deep red colour, presenting all the physical characters of blood which has been drawn from a vein. Two or three small clots were at the bottom of it. The ribs, lung, and diaphragm were lined with thick and red false membranes, traversed by filaments which interlaced with each other, and left areolæ between them, which were all nearly of the same form and size.

The middle and lower lobes of the right lung were pressed on the lateral parts of the vertebral column. Their tissue was red and contained no air. The upper lobe contained several crude tubercles, between which the pulmonary tissue was very much engorged. Left lung was healthy. Heart presented nothing remarkable.

Inner surface of stomach white; considerable sub-mucous injection over all the small intestine. The large intestine presented through the entire extent of the colon five or six oblong ulcerations, the great diameter of which corresponded with the transverse diameter of the intestine; their bottom, which was blackish, and formed of thickened sub-mucous cellular tissue, presented in some of them grains of tuberculous matter; each of these ulcerations occupied at least two-thirds of the breadth of the intestine; in the intervals between them the mucous membrane was very pale, and of ordinary thickness and consistence. All the large intestine contained fæces. The mesenteric glands were tumefied, and most of them tuberculated. The liver, gorged with blood, presented several portions of a yellowish white which greased the scalpel ; the spleen, of a large size, was reduced to a pap by pressure ; close cellular adhesions connected the colon to the liver.

When first we examined this patient the pleuritic effusion had been already a long time formed : there is every reason to think that it began at the period when the pain of side manifested itself, a month after the catarrhal attack. The rest and treatment which this person received in La Pitié caused most of the symptoms to disappear, but they returned as soon as the patient, resuming his ordinary habits, drew a greater quantity of blood to the lung ; thence the difficulty of breathing, reappearance of the pain, general anxiety, afflux of badly elaborated blood towards all the organs, and consequently defective nutrition, debility, speedy death, which would have been retarded by a more careful observance of the rules of hygiene.

The great quantity of the effused liquid was indicated by the great dulness of sound, the complete absence of the respiratory murmur, and of ægophony. Towards the apex of the lung only some crepitous râle was heard ; the reason of this was seen in the circumstances connected with the upper lobe, which being attached to the ribs by adhesions, could not be displaced by the liquid, and formed in some measure the vault of the cavity, which was filled with the fluid. The crepitous râle announced besides an inflammatory engorgement of the pulmonary tissue ; its existence was actually ascertained.

The presence of sanguineous clots in the pleura does not admit a doubt but that the effusion in a great measure consisted of natural blood : this is not the most common case; usually the effusions of red liquids into serous membranes appear to consist merely of serum united to a greater or less quantity of the colouring matter of the blood, but without fibrine. Was this effusion sanguineous from the very commencement? Was the blood exhaled only towards the latter period of life ? These questions cannot be solved. But what it is important to remark is, that during life this sanguineous effusion gave rise to no symptom which could enable us to distinguish it from a serous or purulent effusion. Above all, the very acute pain which is said to accompany the formation of such effusions was not observed.

We shall not dwell here on the development of the tubercles in the lung, in the intestines, and in the mesenteric glands, in a person whose constitution was any thing but lymphatic. We shall merely remark that in the abdomen their development seemed to be consecutive on the inflammation ; that in the chest they existed in the midst of an inflamed tissue, and only on the side where the pleuritis was.

We shall also direct attention,—first, to the nature of the expectoration, similar to that yielded by large tubercular cavities, and which was merely the product of the bronchial mucous membrane ; secondly, to the absence of the diarrhœa in a case where extensive ulcerations existed in the large intestines.

CASE 9.—*Sanguineous effusion—False membranes tuberculated.*

A servant, about fifty years of age, of strong make, had always enjoyed good health. During the last three weeks of March, he felt below the left breast slight pains, which came several times and disappeared. However, he continued at his usual occupations. On the 4th of May, after dining, the pain of side, which had ceased for some days, suddenly returned with greater severity than ever ; it continued all the night. The least motion, the slightest pressure, deep inspirations, exasperated it. On the 5th the patient began to cough, and kept his bed : leeches applied over the seat of the pain lessened, but did not remove it. From the 5th to the 12th of May he had dry cough, continuance of the pain, and great oppression. On the morning of the 13th, we saw him for the first time, when he presented the following state :—

Face pale, and cast down ; decubitus in the horizontal position impossible, under pain of threatened suffocation. He remained half sitting up in the bed, the head and back being supported by pillows, as in diseases of the heart. Breathing short and hurried ; pants a little when speaking ; pain still remains. Cough frequent ; expectoration catarrhal ; sound very dull, and absence of all respiratory murmur at the left side ; no ægophony. On the right, respiratory murmur clear and very loud ; pulse moderately frequent ; skin hot and dry. Diagnosis : pleurisy on the left side, which has terminated in effusion. (He was bled largely.)

The blood was buffed and cupped : the coagulum small, and surrounded by a large quantity of serum.

On the next day the breathing was less embarrassed ; countenance more natural. Pain felt only when strong pressure is employed. (Another venesection.) Appearance of the blood the same.

15th. (A large blister to the side.) This night a profuse sweat for the first time. On the morning of the 16th, the breathing much more free than on the preceding days ; lies equally well in any position ; pulse scarcely frequent. The patient feels himself strong and cheerful. On the left the dulness of sound continued from the base of the chest as far as the middle of the scapula ; higher up the sound was clear enough, and the respiratory murmur was heard there but feebly. It was evident that some of the effused liquid was absorbed.

17th. Evident ægophony was heard for the first time posteriorly. Thus, the appearance of this sign coincided here with the diminution of the effusion.

From the 18th to the 21st, the same state. On the night of the 21st, the breathing again became very much embarrassed all at once. The next morning a return of the orthopnœa, intense anxiety, dejection of spirits, pulse weak and very frequent. However, the signs afforded by auscultation and percussion did not show that the effusion had increased. (Two blisters to the legs.) In the course of the day the dyspnœa and frequency of pulse became less. During the rest of the month of April the state of the patient underwent no perceptible change. The breathing was but little embarrassed whilst he remained at rest ; but the mere effort to get out of bed almost produced suffocation. Ægophony constantly evident, cough slight, pain entirely gone ; pulse frequent, without the skin being hot ; anorexia complete ; tongue natural ; evacuations of the ordinary character. The blisters on the legs and chest were allowed to heal, and one was placed on the arm. Rice-milk and broths were allowed him for nourishment.

At the commencement of May sweats appeared every night ; his debility made rapid progress, countenance became changed. These signs announced the approach of death. Still the respiratory murmur was re-established on the left side anteriorly ; posteriorly we were beginning to hear it, but very feebly. The ægophony no longer existed. Then though his general state was worse, the local disease appeared better. We strove to sustain his strength by giving every day a pint of decoction of polygala, with the addition of half an ounce of oxymel of squill, and an ounce of syrup of bitter orange peel, a little ether, kermes.

On the 20th of May he became uneasy about family affairs, wished to go home, and when he strove to walk about fifty paces, he found himself too exhausted to proceed ; he then called for a vehicle, which he had scarcely entered, when he requested suddenly that the coach door should be opened, he lost all consciousness, and expired.

Post mortem. The left pleura contained more than a pint of a liquid of a deep red colour, altogether like blood just taken from a vein. At the bottom of this mass there were observed reddish amorphous masses, formed of an areolated tissue, in the midst of which several small cavities were found full of liquid blood. The pleuræ costalis and pulmonalis were lined by false membranes of a bright red colour. Beneath them others were found, thick and white, in the midst of which several tubercles were developed. The left lung healthy, and still very pervious to air, occupied the greater part of the cavity which ordinarily receives it. Nothing remarkable in the right lung, or right pleura. The heart was of the natural size, and well proportioned. Its right cavities contained a large fibrinous clot, divested of colouring matter. This clot distended very much the auriculo-ventricular orifice, and was continued into the venæ cavæ and pulmonary artery.

The inner surface of the great intestine very much injected. The lateral ventricles were distended by a considerable quantity of transparent serum.

In this patient, as in the preceding, the pleuritic effusion consisted in a great measure of blood. Neither in him did any particular symptom indicate this species of effusion ; and it is impossible to say whether it was such from the commencement, or whether the sanguineous exhalation took place only since the 20th of May, the time at which we observed the temporary aggravation of the symptoms, which did not coincide with an increase of the effusion : the white colour of the deep-seated false membranes seems to show that the effusion was not originally sanguineous.

The collection also had been much more considerable than was found at the *post mortem* examination. The signs afforded by auscultation and percussion indicated its different periods of increase and diminution. Thus the dulness of sound diminished progressively from the upper part of the thorax towards the lower. The respiratory murmur, at first totally absent over the entire extent of the left side, was heard first feebly below the left clavicle, then over all the remainder of this side. Thus the existence of half a litre of liquid in the pleura did not prevent the respiratory murmur from being heard, only it rendered it much weaker. With respect to the tremor of the voice, which was none at first, it did not begin to appear till the quantity of effused liquid had been considerably diminished; subsequently, when the effusion became still less, the ægophony ceased to be heard.

We have already pointed out that want of correspondence between the progressive diminution of the effusion, and the general state of the patient, which continually became worse. Can the nature of the effusion account for it? The patient was now arrived at the last stage of exhaustion, when he attempted to make an unusual exertion. Did the acceleration of the pulmonary circulation, which was the result of it, occasion his sudden death ?

Let us now look back to the onset of the disease : it was announced, or rather preceded, by an indefinite, temporary pain, not very severe, nor accompanied by any serious symptom, which seemed to depend only on inflammation of the pleura, very slight and circumscribed. The application of some leeches, rest, strict regimen, and emollient cataplasms would probably have removed it. Being neglected, it became more severe, spread, and was changed into a fatal disease.

We several times observed the state of orthopnœa, which is as rare in pleuritic effusions without complication, as it is common in diseases of the heart. The perspirations which appeared towards the eleventh day, dating from the period when he took to the bed, were accompanied with evident improvement. On the following days, the skin remained dry ; subsequently, the sweats reappeared ; but this time they were purely symptomatic, exhausted the patient, and hastened his dissolution. Does their appearance mark the time when tubercles began to be developed in the pleura ? We think we have ascertained that, in several chronic inflammations, profuse sweats supervene only when tubercles are formed in the inflamed tissues.

The fever was usually announced only by the frequency of the arterial pulsations; two or three times only the temperature of the skin was perceptibly raised. This simple frequency of the pulse, without heat of skin, is, in many chronic inflammations, the sole index of the disturbance of the circulation; no feeling of illness results to the patient from it, since in that state he does not suppose that he has any fever, whilst he complains of it the moment the skin becomes hot.

CASE 10.—*A pleuritic effusion opening externally between the ribs.*

A woman, fifty-five years of age, entered La Charité 10th of July. Two months before she had had a pulmonary attack, with pain, below the right breast, and dry cough: since that time she has cough and shortness of breath.

State on the 11th of July:—face flushed, great anxiety. She can lie only on the right side; the integuments on this side of the thorax are œdematous; the dyspnœa is very great, and as soon as the patient sits up, she is seized with violent kinks of coughing, which prevent us from availing ourselves of auscultation. On the other hand the infiltration of the integuments renders the signs afforded by percussion uncertain, nor indeed can it be employed in consequence of the pain it occasions. The sputa, which are free, are those of chronic bronchitis. Pulse frequent: no heat of skin. (Blisters to the legs.)

The day after, the 12th, the patient being more tranquil, we were enabled to employ auscultation. The respiratory murmur was heard on the left, loud and clear. On the right it was heard in every part very clear, but very feeble.

From 15th to 16th, state the same: constantly lies on the right side.

17th. Pulse more frequent; skin hot; dyspnœa increased; on the right the respiratory murmur no longer heard; more resonance of the voice than on the left. The effusion evidently increased. (Venesection to twelve ounces;—demulcents.)

18th. Blister to the right side. On the following days the difficulty of the respiration not diminished; the patient complained so much of the blister that we had it removed; another was applied to the arm. Constantly lying on the right side, the integuments of which were always œdematous, she could with difficulty utter a few words with a panting voice: over all this side, respiratory murmur gone. Slight frequency of the pulse; skin but little hot and dry.

29th of July, we found the patient lying on her back for the first time. Besides the infiltration of the preceding days, we observed beneath the right clavicle a swelling which extended to near the mamma; pressure on this part excited acute pain. During the following days this tumour made evident progress; fluctuation became evident in it. A bistoury was plunged into it on the 16th of August; a considerable quantity of thick pus, mixed with albuminous flocculi, flowed from it; this quantity of liquid was so great, that there was reason to think it came from the pleura. At each inspiratory movement, we perceived a greater quantity of pus come out. The three following days much pus was seen to flow through the lips of the incision. The patient stated that she breathed more freely since the abscess was opened; however, her features became rapidly changed; the extremities became cold, and death supervened four days after the opening of the abscess.

Post mortem. The abscess being fully cut into, we found pus infiltrated through a great portion of the subcutaneous and intermuscular tissue of the right side of the chest. Between the fifth and fourth ribs there was an opening with irregular edges, through which the pus contained in the pleura made its escape externally from the chest. A great quantity of purulent liquid filled the right pleura. False membranes lined the ribs and the lung; the latter, pressed against the lateral parts of the vertebral column, was reduced to a small size, and was empty of air; its parenchyma was healthy, as well as that of the left lung.

From the inner surface of the neck of the uterus, a pedicle, five or six lines in length, was detached, appearing as if a continuation of the mucous membrane; it was prolonged beyond the orifice of the neck, and terminated, at about a line from this orifice, in a globular body, about the size of a hazel nut, hanging between the two lips of the neck, before which it projected : it consisted of a multitude of small agglomerated serous cysts.

The infiltration of the integuments, the pain, and kinks of coughing, were so many circumstances which at first prevented us from the advantage of employing percussion and auscultation. The following days, auscultation having now become practicable, detected the existence of a pleuritic effusion on the right; this effusion which, at first, was so inconsiderable as not entirely to prevent the respiratory murmur from being heard, was afterwards increased, occupied all the right cavity of the chest, and ultimately made its exit through an intercostal space. From the time the subcutaneous abscess had been artificially opened, and the pus contained in the pleura began to make its way out, the patient sunk with frightful rapidity ; so that, in this case, that which seemed a means of cure prepared by nature, became, on the contrary, a cause of more speedy death.

We have seen an account of two other cases of pleuritic effusions, in which the liquid collected in the pleura also made its escape externally under similar circumstances. Then in those two cases, as in that just cited, an abscess formed between the ribs and skin ; it was also opened ; but further, a real operation for empyema was performed, and the patient recovered.

One of these facts, cited in the *Nouveau Journal de Medecine*, was extracted from the Italian journals : the other from the London Medical Repository. The former we shall insert in this place :—

A boy, fifteen years old, had an attack of acute pleurisy which passed on to suppuration. There gradually appeared a small tumour between the third and fourth true ribs. After the application of emollients, a small incision was made over the most dependent part of the tumour, and a great quantity of pus escaped. After being seven months labouring under the disease, and being now reduced to the last stage of emaciation, the patient consulted Dr. Pacini, who thought that the abscess should be opened by an incision made two ribs below the fistulous opening ; he penetrated with the instrument between the intercostal muscles, and, making an incision in the pleura, he now entered the chest. He found the lung adhering, and perceived that he had not penetrated the focus of the suppuration. The wound remained open for two days, during which time the cough became more frequent, and the oppression greater. On the third day a great quantity of pus escaped through the new incision, and much less through the former wound. In the space of two months the latter was entirely closed ; the new one continued to suppurate for five months : at the end of this time the cough disappeared, and the cure was complete.

Is it very certain that there really was in this case an effusion into the pleura ?

CHAPTER III.

PARTIAL PLEURISIES.

Circumscribed inflammations of the pleura are very frequent. They seldom give rise to any febrile disturbance, nor do they in any way disturb the ordinary functions, and are announced only by more or less acute pain in some limited part of the thoracic parietes ; sometimes this pain is temporary ; sometimes it continues for several days. A slight albuminous exudation supervenes, which in time becomes changed into laminated tissue. Thence the formation of cellular adhesions, which unite more or less closely the pleuræ costalis and pulmonalis. These adhesions are often observed in persons who have not had any serious affection of the chest during life. We also found, but more rarely, similar cellular bands uniting different small portions of the peritoneum, such as the liver and colon, or two convolutions of small intestine, though the individual presented during life no symptom resembling those of peritonitis. Finally, we also observe these same adhesions, and even more frequently than in the peritoneum, between different portions of the arachnoid, in persons who presented no symptoms whatever of arachnitis. The small bodies usually designated *glands of Pacchioni* are actually nothing but albuminous concretions, the result of inflammation. Their great frequency is no reason for considering them as appertaining to the healthy state, for they are not met more frequently than the cellular bands of the pleura, and no one will, at the present day, consider the latter as natural ligaments, as was formerly done. What are we to infer from these facts? This, that inflammation of serous membranes, when it is not very extensive, may arise, be developed, and even produce false membranes, without this pathological process being announced by any other symptom than a pain more or less acute: the pain itself may be wanting.

These partial inflammations of the pleura may exist alone, as we have seen; but they much more frequently supervene in cases where the pulmonary parenchyma is affected; they are even an almost constant complication of this affection. Thus pleuro-pneumonia is a much more common disease than simple pneumonia. Thus almost all phthisical patients are subject to suffer from time to time pains in different parts of the thoracic parietes; these pains have their exclusive seat in the pleura, and indicate inflammation of one of the points of this membrane. Thus after death the lungs of phthisical patients are almost always found united to the ribs by cellular bands, more or less numerous; their number is generally in the direct ratio of the quantity of the tubercles, and they exist particularly in the points corresponding to the parts where the tubercles are most abundant. In a person whose lungs contained but one tubercle, situated almost immediately under the pleura, at the base of the upper lobe of the right lung, we found the pleura entirely free from adhesions, except in the part corresponding to this tubercle. In this point there existed a thin cellular band, which united the two lobes. These partial pleurisies appear to have a tendency to form, when the tubercles are still crude, and the pulmonary tissue surrounding them is still very healthy.

Some species of partial pleurisies merit particular attention, in consequence of the particular symptoms to which they give rise. Such are principally diaphragmatic and interlobular pleurisies; such also are the partial effusions which form either between the ribs and lung, or between the lung and mediastinum, or merely toward the summit of the lung. We shall cite some examples of those different species in so many separate paragraphs.

ARTICLE I.

DIAPHRAGMATIC PLEURISIES.

SECTION I.

ISOLATED DIAPHRAGMATIC PLEURISIES.

CASE 11.—A cabinet maker, twenty-six years of age, entered La Charité in the month of April 1822. Two days before he had been seized, whilst at work, with a slight shivering, which was soon followed by a burning heat. In the midst of this, an acute pain was felt in the left hypochondrium, along the cartilaginous edge of the ribs; at the same time there was considerable oppression. The patient endeavoured in vain to remove this pain by the application of hot cloths, and by swallowing some *eau de vie*, in which he mixed up a considerable quantity of pepper. He had no sleep during the night, and was very restless. He had hiccup three times. On the next day, the pain in the hypochondrium still continued, dyspnœa increased, cough became frequent. We saw the patient for the first time the beginning of the third day. He was sitting up with the trunk bent forwards, his hand continually applied to the hypochondrium, the slightest pressure on which occasioned him to scream aloud; he with difficulty pronounced a few words in a broken, interrupted voice; his features expressed the most intense anxiety; his inspirations short and frequent, were performed only by the elevation of the ribs; the cough was frequent; no expectoration; percussion and auscultation afforded no information; the pulse was very frequent and hard, skin burning and dry; intelligence perfectly clear.

M. Lerminier suspected the existence of a diaphragmatic pleuritis; he ordered a bleeding of twelve ounces, and the application of twenty leeches along the cartilaginous edge of the false ribs of the left side. In the course of the day, the pain diminished a little, but in the evening it returned with increased violence, and in the night the patient became delirious. On the morning of the fourth day, intelligence again returned, but the pain and orthopnœa continued; the respiration and cough presented the same characters. The pulse had lost nothing of its frequency or hardness; the muscles of the face presented some convulsive movements from time to time. (Another bleeding to twelve ounces; twenty leeches to the affected side; emollient drinks.) There was some remission during the day; he became worse towards evening, and delirious during the night. (Sinapisms to the legs.) On the fifth day, there was a continuance of the same symptoms, and also continual nausea. (Blister to the thigh.) On the sixth day, the features were very much altered; lies on his back; voice gone; hiccup and nausea from time to time. He died in the evening.

Post mortem. The two portions of pleura which line the base of the left lung, and the upper surface of the diaphragm of this same side, were very much injected and covered with albuminous exudations, which extended from the one to the other. The other parts of the pleura were very healthy, as well as the lungs; nothing remarkable in any of the other organs.

The symptoms of inflammation of the diaphragmatic pleura were the more marked in this case, as no other disease complicated it. Here death supervened, as in cases of peritonitis, without any material lesion of any of the organs essential to life. The partial inflammation of a serous membrane is sufficient to occasion the most alarming symptoms by the sympathetic disturbance excited in the nervous system.

Case 12.—A tailor, thirty-one years old, had had for the last two years several attacks of hemoptysis; he habitually had a small dry cough with slight dyspnœa, when, on the 5th of October, after having been wetted very much in the rain, he felt towards the xiphoid cartilage an acute pain which obliged him to bend his body, and impeded his respiration. He applied twelve leeches over this part; the pain disappeared; the next day it was again felt at intervals. The day after he awoke from sleep, about three o'clock in the morning, in consequence of a violent pain, which at this time was seated along the cartilaginous edge of the ribs of the right side, and extended even through the entire hypochondrium, and as far as the flank of the same side. At the same time he was extremely uneasy; a continued desire to cough, without venturing to satisfy it for fear of exasperating the pain; he vomited twice or thrice in the course of the day. He entered the hospital, and on the morning of the 8th he presented the following state:—Face pale, expressing the most intense anxiety; breathing short, performed merely by the motion of the ribs; small continual cough; pain in the place already mentioned, which was increased by pressure. On making slight pressure on the epigastrium, nausea was excited, as also hiccup, which soon ceased, but which was reproduced by pressure. Lies on his back; the patient refuses every species of motion, so that it is impossible to employ percussion or auscultation but very imperfectly; high fever; tongue natural. (Application of thirty leeches over the right hypochondrium.) The 9th of October, the pain extended again to the epigastrium; the patient, in order to relieve himself, is almost constantly sitting up in the bed, the thorax being inclined on the abdomen. The chest, when percussed, sounds well in every part; the respiration, when examined, is heard to be feeble but clear. (Venesection to eight ounces; twelve leeches to the epigastrium.) In the course of the day the pain of epigastrium disappeared; that of the hypochondrium still continued; the breathing a little freer after the bleeding. On the sixth day, a slight icteric tint over the entire surface of the skin; conjunctiva very yellow; same state in other respects. On the 7th day, pain almost gone; breathing easier; coughs but seldom; no expectoration; lies on his back. In the evening, sudden return of the pain of right hypochondrium, and with it of all the other symptoms. Vomiting of green bilious matter in the night, after which the pain became so acute, that the patient for a moment lost all consciousness. The next morning, eighth day, features sharpened; lips retracted, and convulsively agitated; orthopnœa. The patient, sitting up, is not willing either to speak, or to make the least motion for fear of exasperating the pain; pulse frequent and hard; skin hot; yellow colour of the skin and conjunctiva is very marked. (Venesection to eight ounces; emollient and narcotic cataplasms over the epigastrium and right hypochondrium.) In the course of the day the intellects became disturbed; screams aloud. On the 9th day, pain only felt when he coughs or makes any exertion; but the breathing is very much impeded; frequency of pulse still continues. Auscultation and percussion gave no new information; jaundice still continues. On the 10th day, the respiration is distinctly heard less on the right than on the left, where it has become *puerile.* Dyspnœa considerable; pain of hypochondrium very obtuse; patient complains of having frequently a desire to vomit; tongue natural. (Two blisters to the thighs.) On the 11th and 12th days, the same state; the right side of the chest perceptibly less dilated than the left. On the 13th day, hiccup for several hours, during which the pain of hypochondrium and epigastrium is renewed; jaundice not diminished. On the 14th and 15th days, dyspnœa increased; pulse again very frequent; features altered; respiration heard but very feebly on the right; sonorousness of chest not sensibly diminished on this side; the last sternal ribs of right side appear to be a little depressed; the liver is felt for the first time in the hypochondrium. (Blister over the right side of the chest.) On the 16th, 17th, and 18th days, the sharp edge of the liver is felt almost on a level with the umbilicus. Extreme oppression; nausea; frequent hiccup; the patient is tormented with vomiting. He fell in a few days more into a state of coma, and died.

Post mortem. The base of the right lung was separated from the diaphragm by a sero-purulent effusion, which was circumscribed on all sides by membraniform concretions which extended from the diaphragm to the lung: this effusion compressed both the right lung and liver at one and the same time. Other parts of the pleura healthy; lungs filled with miliary granulations, surrounded with a tissue which crepitated, but which was engorged posteriorly; heart and pericardium natural; subarachnoid cellular tissue covering the convexity of the brain very much injected; milky serum in the lateral ventricles.

In this person we at first found nearly the same symptoms as in the subject of the preceding case; there was, besides, a well-marked jaundice, the result probably of the irritation transmitted by contiguity of tissue from the diaphragmatic pleura to the liver. However, the symptoms of the acute affection became mild, and then appeared new phenomena which announced the transition of the disease to the chronic state. The diminution of the respiratory murmur on the right side, with continuance of the sound on the same side, might have induced one to believe in the existence of emphysema of the lung; but that, as well as the descent of the liver into the hypochondrium, was but the mechanical result of the circumscribed effusion, of which the diaphragmatic pleura was the seat. Though, in this case, the great embarrassment of the respiration, and the great frequency of the pulse rendered the prognosis very unfavourable, the patient might still have dragged out existence for some time; his recovery even should not be considered as impossible when a super-acute arachnitis suddenly carried him off. It is scarcely necessary to say that the miliary granulations found in the two lungs account sufficiently for the hemoptysis, the habitual cough, and the slight dyspnœa felt by the patient for a long time.

With respect to the depression of the liver, owing to the pleuritic effusion, this case somewhat resembles one mentioned by Stoll. An individual, he says, affected with a pleuro-pneumonia, felt on the nineteenth day a very acute pain in the left hypochondrium: the signs of empyema manifested themselves, and the spleen soon formed a projection in the left flank. At the autopsy more than twelve pints of pus were found in the left side of the chest. The diaphragm, depressed by this liquid, projected into the abdomen and pushed the spleen before it, so that, says Stoll, the pain which we thought belonged to an organ of the abdomen, had its seat in the chest.

CASE 13.—*Diaphragmatic pleuritis, with perforation of the diaphragm.*

A mason, thirty-seven years of age, entered the Charité, 8th of May, with all the symptoms of pulmonary phthisis in the second stage. Towards the beginning of June, he several times felt stitches in the side, which were removed by some applications of leeches. On the 11th of June, in the midst of the evening febrile exacerbation, he was seized with an acute pain on a level with the last false ribs of the left side; this pain continued on the following morning; the breathing was short, hurried, and entirely costal; a profuse hemoptysis came on at the same time. (Bleeding general and local; revulsives to the lower extremities.) The spitting of blood was arrested, the pain was lessened, but did not cease. Towards the 20th of June, it extended to the left hypochondrium, and as far as the flank of this side; dating from the latter period, he wasted rapidly; immense caverns formed in the pulmonary parenchyma, where pectoriloquy and the mucous râle announced them. The patient died the 18th of July. From the commencement of July, the pain of the hypochondrium and left flank was felt only on pressure, sudden movements, deep inspirations, or kinks of coughing. The breathing, which was much more embarrassed than in most phthisical persons, was constantly performed merely by moving the ribs.

Post mortem. Vast tuberculous cavities in the two lungs; cellular adhesions of the pleura costalis and pulmonalis in a great many points; sound state of the right diaphragmatic pleura, and of the corresponding pulmonary pleura. On the left, on the contrary, the base of the lung adhered somewhat firmly to the diaphragm. We had scarcely destroyed the membraniform adhesions which kept these parts connected together, when we observed an immense abscess which existed both in the chest and abdomen. There the diaphragm presented a perforation about one inch and a half in diameter, through which the pus which was first formed in the pleura had passed in order to enter the abdomen. The edges of the perforation were smooth and blunt, as if it had been of some standing. The pus which had penetrated into the abdominal cavity seemed to have pushed the peritoneum before it. Lodged between the spleen and the parietes of the abdomen, it was bounded on all sides by cellular bands closely connected, which formed for it a sort of pouch. The inner surface of the latter, as well as the edges of the opening of the diaphragm, was lined by a pseudo-membrane of considerable thickness, which was, as it were, villous, and which, when placed in water, appeared to be covered with numerous filaments, such, in a word, as is often found on the inner surface of abscesses. Around the perforation the tissue of the diaphragm appeared not at all altered. Nothing remarkable was found in the other organs.

The symptoms which here accompanied the diaphragmatic pleuritis were less numerous and less alarming than in the two former cases: the pain alone announced its invasion. Its extension to the hypochondrium and flank marked probably the moment when the diaphragm, being perforated, allowed the pus to escape into the abdomen. We shall not attempt to explain the cause of the perforation of the diaphragm; we shall not determine whether this muscle was first inflamed and softened, and whether the solution of continuity took place, either by the simple progress of its softening, as happens in the tissue of the transparent cornea, or by the mere mechanical pressure of the pus on the muscular fibres previously softened; a *pleuro-diaphragmitis* might be admitted in this case. But what must not be lost sight of is, that around the perforation the muscular tissue was perfectly healthy; so that in this point of view this case may be assimilated to those perforations of the intestinal canal said to be spontaneous, in which the tissue surrounding the perforation is also oftentimes found exempt from all lesion. Let us observe, in fine, that, in this case, where there really was an affection of the diaphragm, we did not remark the risus sardonicus, which has been laid dow as one of the most characteristic signs of inflammation of this muscle.

We have seen several consumptive patients who complained, at different periods of their disease, of a pain which had its site either along the cartilaginous edge of the ribs, or in one or other of the hypochondria. These pains, generally not severe, temporary, and unaccompanied by any alarming symptom, we thought might be referred to partial or slight inflammation of the diaphragmatic pleura, and in several of those who died, we actually detected its existence; in others, to be sure, we found no trace of it. Others presented adhesions, more or less extensive, of the lung and diaphragm, though during life they had not complained of any pain, nor did they present any sign which could have made us suspect them.

SECTION II.

DIAPHRAGMATIC PLEURISIES COEXISTING WITH A COSTO-PULMONARY PLEURISY.

These are more frequent than the preceding; their diagnosis is often more difficult, and their prognosis necessarily more unfavourable.

CASE 14.—*Latent pleuritic effusion—On a sudden, signs of diaphragmatic pleurisy, and death.*

A tailor, nineteen years of age, entered the Charité on the 18th of January. For the last three weeks he said he felt wandering pains in the left side of the chest, with cough dry or accompanied by some mucous sputa. However, it was only since the last three days he left off his ordinary work; since then the breathing is difficult, and he is feverish. (Ten leeches to the chest.) On the morning of the 19th, he presented the following state :—Pain now felt, and very slightly, only when he lies on the left side, when this side is pressed or percussed. Sound dull posteriorly in the lower three-fourths of the left side ; in this same part the voice is marked by a sort of tremor ; this particular sound becomes peculiarly marked in the pronouncing of certain words, such as the word *oui* (ægophony). Then too the ordinary respiratory murmur is not heard ; but at each inspiratory movement a particular murmur is heard, a sort of souffle, which indicates that the air does not penetrate beyond the large bronchial tubes. The existence of a considerable effusion into the left pleura appears evident. However, the breathing is scarcely embarrassed, the frequency of the pulse is very slight ; skin retains its ordinary temperature ; decubitus almost indifferent. The patient coughs but little, and expectorates only some mucous sputa. (Venesection ; four palettes ; two blisters to the legs.) On the 20th, the same state. (Blister to the left side.) 21st, sound still more dull on the left ; continuance of the ægophony ; the inspiratory movements, shorter and more frequent, are performed principally by depression of the diaphragm. From this to the 3rd of February, no perceptible change. He was free from fever ; though habitually lying on his back, he could, without any uneasiness, lie on either side ; had scarcely any cough, and assured us that he felt no dyspnœa whatever ; his speech firm ; movements free ; face quite natural ; appetite excellent ; in a word, one would have supposed that the patient had perfectly recovered, did not percussion and auscultation announce the contrary. Such was the very satisfactory state of the patient, when, on the 3rd of January, at eleven o'clock in the morning, he was seized with an acute pain, which, having its principal seat in the left hypochondrium, extended from thence, on the one hand, to the epigastrium, and on the other, to the left flank, not far from the crest of the ilium. In the course of the day, there was considerable oppression and intense fever. (Sinapisms to the legs.) On the morning of the 4th, features drawn, and expressive of the most intense anxiety ; pulse frequent and extremely small ; skin not hot ; inspiratory movements short and very frequent ; pants when he speaks ; pressure on the left hypochondrium painful ; respiration now performed only by the motion of the ribs of the right side. M. Lerminier announced the existence of diaphragmatic pleuritis. (Thirty leeches to the left side.) On the 4th, the patient was sitting up, the trunk inclined forwards ; he said that he was smothering. In other respects, the same symptoms. The three following days, a progressive diminution of the pain of the hypochondrium ; constantly lies on the left side ; cannot lie on the back or right side without being threatened with suffocation ; sound very dull all over this same side, anteriorly and posteriorly ; continuance of the ægophony ; profuse diarrhœa. (Large blister to the epigastrium ; rice water with gum.) On the 8th, features very much altered ; respiration still performed only by the motion of the right ribs ; pulse constantly frequent and very small. On the 9th, profuse sweat ; diarrhœa diminished. During the three following days, there was nothing remarkable but alternations of sweat and diarrhœa. The left side of the chest, measured on the 12th, was found to be broader than the other by from eight to nine lines. On the 14th, at eight o'clock in the morning, the total alteration of the features, the extreme dyspnœa, and great debility of the patient, seemed to announce the near approach of dissolution. Ægophony was still heard very distinctly. He died at eleven o'clock.

Post mortem. An enormous quantity of a purulent greenish liquid filled the left pleura. The costal, pulmonary and diaphragmatic pleura of this side, were covered with white false membranes, wrinkled on their surface, thick over the lung, thin everywhere else. The lung, pressed on the lateral parts of the vertebral column, was almost empty of air. The large bronchial tubes were red, the small white. The diaphragm, which was pushed down, passed down below the edge of the false ribs, and drove the spleen into the left flank. The heart, which was pushed to the right by the effusion, took a vertical direction behind the sternum; thus, during the last periods of life, the pulsations of the heart were no longer perceived in the precordial region, but they were heard with great force at the lower part of the sternum, and in the right side anteriorly; the heart was in other respects healthy. The pericardium contained a little lemon-coloured serum. Venous injection of the stomach and small intestine; red patches of the mucous membrane in the large intestine.

In this patient the pleuritis was not announced by serious symptoms until the inflammation extended to the diaphragmatic pleura; we again find here the same symptoms as in the preceding cases. We should particularly remark the sudden change of the manner of the respiration, which ceased to be abdominal as soon as the diaphragmatic pleura became inflamed. We must also be struck at the seat of the pain, which was felt lower down than in any of the other cases. Were we not afraid of passing the limits of our subject, we might still point out other important circumstances in this case, such as the insidious onset of the disease, the absence of every alarming symptom at the time the effusion was more considerable, the existence of the ægophony in a case where the effused liquid was so copious as to enlarge the thoracic parietes, throw the heart to the right side, depress the diaphragm, etc.

CASE 15.—*Diaphragmatic pleuritis supervening during the progress of pulmonary phthisis.*

A man, twenty-six years of age, had had several attacks of hemoptysis, when he entered the Charité, in the month of December. He was then emaciated and weak. The respiration, which was short, was performed by the double movement of the ribs and diaphragm. Some crepitous râle was heard in the posterior and left side of the chest. The sputa were profuse, consisting of a turbid serum, in the middle of which numerous flocculi were suspended; profuse sweats every night. Diagnosis: pulmonary tubercles beginning to soften; inflammatory engorgement of the lung around several of them. (Leeches to the left side.) Towards the beginning of January, digestive functions became deranged; nausea; vomiting of his drinks. These symptoms yielded to the application of leeches over the epigastrium. The tuberculous degenerescence of the lungs proceeded; evident cavity in the left lung at the end of January. On the 11th of February, an acute pain was felt by him along the cartilaginous edge of the false ribs of the left side, and in the hypochondrium of the same side. On the 12th, this pain continued; extreme anxiety; features sharpened, and frequent convulsive movements in the muscles of the face. The patient was sitting up in the bed, the body inclining forward; he had passed the night in this painful position. The pulse, full enough till then, was now become very small. The existence of a diaphragmatic pleuritis appeared certain to M. Lerminier. (Blister over the left side of the chest.) On the 13th, same state; the sound was not duller, auscultation gave no new information. On the 14th, the patient remained constantly sitting up in his bed; the pain became violent when he attempted to lie down. On the 15th and 16th, he could lie in the horizontal position; the breathing was a little less embarrassed; but the *dulness* of the sound, the absence of the respiration, the tremor of the voice, announced the formation of an effusion into the left side. Dating from the 17th, the patient remained constantly lying on the left side; he could not change in the slightest degree from this position without being threatened with suffocation. Up to the 23rd, the strength diminished, the features became changed, and the breathing became more and more embarrassed. He died on the 23rd of February.

Post mortem. A considerable quantity of turbid serum was effused into the left pleura; soft white false membranes, not yet having any trace of organisation, lined the diaphragmatic pleura of this side, which was very red beneath them. Similar albuminous concretions extended, in the form of bands, from the pulmonary to the costal pleura, but only in the vicinity of the diaphragm. Crude and softened tubercles; greyish softening of the gastric mucous membrane in the great cul de sac.

Here the inflammation commenced in the diaphragmatic pleura: the signs which announced it were very well marked, then they disappeared, and nothing was observed but the ordinary signs of pleuritis, according as the effusion formed and extended between the lung and the ribs.

After having traced minutely, in the preceding cases, the symptoms which announced inflammation of the diaphragmatic pleura with more or less certainty, we shall now endeavour to give a succinct recapitulation of them. Of these symptoms, some presented themselves in all the cases which we saw; others were much less constant; some, in fine, which were considered by Boerhaave as characteristic of paraphrenesis, were not met by us in any case. In the first group of symptoms, we place—1st, A more or less acute pain along the cartilaginous edge of the false ribs, generally extending into the hypochondria, and sometimes even to the flank. This pain was increased by pressure, inspiration, motion, and exertion of every kind; in one case only it began by being felt at the xiphoid cartilage. 2ndly. Complete immobility of the diaphragm in inspiration. This phenomenon was particularly well marked in several of the patients who form the subject of the preceding cases: in them, as long as the costo-pulmonary pleura alone was affected, the respiration was abdominal; but scarcely had the pain of the hypochondrium announced the extension of the inflammation to the diaphragmatic pleura, when the abdominal parietes were no longer raised, and inspiration was produced solely by the elevation of the ribs. 3rdly. A very remarkable anxiety, expressed particularly by the sudden alteration of the features. 4thly. An almost constant orthopnœa, with inclination of the trunk forwards. This symptom, which, however, is sometimes wanting, appears to us one of the most characteristic; patients in this situation dread the slightest motion, as being calculated to awaken most violent pain. When we find combined in the same patient either the different symptoms now mentioned, or only the two former, we should be inclined to suspect the existence of diaphragmatic pleuritis, and in several of our cases we have seen that it was announced with certainty.

Other symptoms, we have said, are much less constant. Such are the hiccup, the result of sympathetic irritation of the diaphragm, nausea, and vomiting. We have observed these latter symptoms in persons whose stomach was found perfectly healthy. Such also are the convulsive movements of the muscles of the face, and particularly of those of the lips; delirium which supervenes either in a continued or intermittent form. Finally, when the diaphragmatic pleura of the right side is the seat of inflammation, the liver may be sympathetically irritated, and jaundice developes itself. The co-existence of this jaundice with a more or less acute pain of the right hypochondrium may induce one to believe in the presence of hepatitis. A similar error appears to have been committed by Morgagni in a case of pleuro-pneumonia, where the pain existed only towards the xiphoid cartilage. When avowing his error in the matter he says: *Adeo in medicinâ facile est per ea ipsa interdum decipi, quæ facere videntur ad vitandas deceptiones!* (Epist. xx., part 31.)

With respect to the risus sardonicus, noticed by Boerhaave, Van Swieten, De Haen, etc., we never observed it.

Whatever be the respective importance of the different signs now passed in review, it should not be forgotten that the greater number of these phenomena may also be produced sometimes by one or more of the numerous organs lying in the upper part of the abdomen; our only aim was to show that they may often depend on diaphragmatic pleuritis. On the other hand, we should not lose sight of the fact, that this species of pleurisy may exist without being announced by any characteristic symptom, just as cases of arachnitis exist without delirium, of pneumonia without dyspnœa, and of peritonitis without pain.

ARTICLE II.

INTERLOBULAR PLEURISIES.

CASE 16.—*Rational signs of pulmonary phthisis—No information from percussion and auscultation—Effusion of pus between the two lobes of the left lung—Some miliary tubercles in this same lung.*

A sawyer, twenty-six years of age, entered the hospital on the 16th of February. He stated that, for the last four or five months, he had a cough and shortness of breath. He had never spit blood. When we examined him, he was in a state of marasmus. Cough not frequent ; expectoration catarrhal ; inspiratory movements short and frequent ; he had never felt any pain in the thorax. The chest, when percussed, sounded well in every part ; the respiratory murmur was heard loud and distinct in all points : there was habitually a little fever, marked by frequency of pulse, and a little heat of skin, without there ever being any sweat. The digestive functions were nearly intact. We considered this person as labouring under chronic bronchitis, and probably pulmonary tubercles still in a crude state, with the pulmonary tissue healthy around them.

On the following days we heard in different parts different varieties of the bronchial râle (sibilous or mucous, often confounded with the crepitous).

However, the patient's strength diminished, appetite was lost, diarrhœa set in, and he died about a month after admission.

Post mortem. The left lung at first presented nothing remarkable. Adhesions united the two lobes, and seemed to have caused the fissure between the lobes to disappear, but the latter had ceased to exist only to the extent of some lines, and scarcely were the adhesions existing in this short space broken, when we discovered the remainder of the fissure considerably enlarged, and occupied by a purulent liquid, in a quantity sufficient to fill an ordinary glass ; this liquid was inclosed in a pouch, the parietes of which, formed above and below of pulmonary tissue, were completed by thick false membranes which extended from one lobe to the other ; the remainder of the pleura of this side was exempt from all trace of inflammation. The pulmonary parenchyma contained a dozen tubercles almost of miliary size ; in other respects it was healthy. The lung and pleura of the opposite side presented nothing remarkable. The bronchi of both lungs were very red. The gastric mucous membrane in its splenic half was reddish, very thin, and so soft, that the least scraping reduced it to a pulp. The mucous membrane of the termination of the small intestine, of the cæcum, and of part of the colon, was very much injected, and ulcerated in some points.

This example is sufficient to show how obscure the diagnosis of interlobular pleurisies is. It is evident that in this case it was impossible. The severity of the symptoms does not seem proportioned in this case to the small extent of the pleuritic effusion. The chronic bronchitis contributed probably, as well as this effusion, to produce the marasmus, to keep up the fever, and impede the respiration. Death was hastened by the gastro-intestinal inflammation.

Ancient authors appear to have more than once described, under the name of abscess of the lung, interlobular effusions similar to that now described.

ARTICLE III.

INFLAMMATION OF THE MEDIAN PLEURA, OR MEDIASTINUM.

CASE 17.—*Signs of effusion into the pericardium—Healthy state of this sac—Collection of pus behind the sternum and the costal cartilages—Tubercular diathesis.*

A tailor, twenty-nine years old, entered the Charité in the latter end of December, labouring under slight and recent inflammation of the mucous membrane of the bronchi and intestines. (Leeches to the anus : demulcent ptisans.) In three days the gastro-intestinal mucous membrane was nearly gone, but the cough and fever were increased, and he complained of an acute pain between the left breast and the sternum, which was increased by the cough and inspiration. (Twenty leeches to the part affected.) The next day seat of pain changed, it being now felt below the right clavicle : this was considered rheumatic : he was bled to eight ounces. On the 31st of December the pain returned to its original seat : countenance expressive of the most intense anxiety ; pulse hard and very frequent ; we apprehended pericarditis. (He was bled to twelve ounces ; thirty leeches to the precordial region.) Blood buffed and cupped ; clot very small. On the 1st January no amendment ; breathing short and hurried ; pain acute ; pulse frequent and hard, countenance pale and anxious ; he lies on his back. The pain rendered percussion impossible : respiratory murmur and pulsations of the heart natural. M. Lerminier prescribed a third bleeding (eight ounces). The blood presented the buffy coat as before.

On the 2nd of January pain less acute ; respiration more free ; pulse less frequent. On the 5th (the eighth day since the appearance of the pain), percussion now became practicable, detected a dull sound between the left breast and sternum, to the extent of three or four fingers' breadth in height. Over this same part the pulsations of the heart were heard to be weak, and as it were confused ; the respiratory murmur not heard in this part. Pulse still frequent ; lies on his back. We considered it likely that an effusion of pus was going on into the pericardium. (Blister to the precordial region.)

From the 5th to the 10th of January (thirteenth day) state not much changed : two blisters to the thighs. On the 11th sound very dull over almost all the precordial region ; pulsations of the heart scarcely heard , neither ægophony, nor any particular resonance of the voice.

From the 15th to 20th, the sound became dull to a greater extent ; *this dulness was more particularly remarkable at the lower part of the sternum*, where the sonorousness is ordinarily so great. He continued to sink, and died the twenty-fourth day.

Post mortem. Immediately behind the sternum, the cartilages of the eight or nine last ribs, and behind the anterior termination of those ribs, was found a vast cavity filled with thick pus. It was at first thought that this cavity belonged to the pericardium ; but we soon satisfied ourselves that the pericardium was intact behind this accidental pouch, and that this cavity was formed entirely at the expense of the pleura, which, from the inner surface of the lung, passes behind the sternum to join that of the opposite side, and thus form the mediastinum. Thick false membranes, studded with numerous tubercles, circumscribed this collection of pus on all sides ; albuminous bands, some of which were rather solid, traversed it in different directions. Externally, this cavity was enlarged at the expense of the lung, which was compressed towards the ribs. On the right the upper lobe of the lung contained some tubercles, some of which were beginning to soften. Tubercles were found in the liver, some of them already softened. Some in the spleen, in one of the kidneys, and under the intestinal mucous membrane.

Did not the aggregate of the symptoms in this case seem to indicate the existtence of an effusion into the pericardium, a consequence of acute inflammation of this sac? Such, however, was not the case; the patient had only partial pleurisy, and the pus existed only in the pleura. Auscultation afforded no sign which could enable one to avoid the error: ægophony not heard at any period. In this patient there was not much dyspnœa, except at the commencement, when the intensity of the pain prevented the thoracic parietes from moving: it is not then of the embarrassment of the respiration that the patient died; death was occasioned by the purulent secretion in a part of the pleura, and the simultaneous development of tubercles in the lungs, liver, spleen, kidneys, and intestinal canal. We saw how obscure this general process of tuberculisation was, which also took place in the false membranes of the pleura: no particular symptom announced it in the numerous organs, which were the seat of it, and yet nutrition was already sufficiently altered for death to be the inevitable result of it. Every medical man must have met cases in which the wasting of the patients admits no doubt of the existence of an organic lesion, though it may be impossible to determine the seat of it: this is the case in idiopathic hectic fevers, of which we now no longer meet any instances, since we have been more careful in our *post mortem* examinations.

This case may also serve to show how useless the most active antiphlogistic treatment sometimes is, though it may have been employed from the very onset of the disease, and under the most favourable circumstances. Here bloodletting was employed very decidedly to a very great extent, and yet we sometimes see a very small bleeding sometimes remove, as if by enchantment, a commencing pleuritis. Why, when all the circumstances remain the same, is a remedy so effectual in one person of no avail in another? We may say with Baglivi: *De morbis pulmonum, etiamsi peritus in arte sis, vel censearis, noli cum jactantia de illis disserere, vel facilem promittere curationem.*

ARTICLE IV.

PARTIAL INFLAMMATION OF THE COSTO-PULMONARY PLEURA.

CASE 18.—*Partial pleuritic effusion with cartilaginous and bony false membranes—Pulmonary melanosis.*

A carpenter, sixty-eight years of age, felt an habitual difficulty of breathing since the last five or six months; he is out of breath when he walks; this state came on gradually without being preceded by any acute disease. The patient never felt any thoracic pain. He entered the hospital January 12: he was weak, pale, and very thin; breathing short, hurried; pants when speaking; cannot lie in the horizontal position. Chest, when percussed, sounds but very feebly on the right, from the clavicle to the breast; in this same space the respiratory murmur is clear, but weak. On the left the sound is very dull in the supra and infra-spinous fossæ, as also laterally and anteriorly, in the space between the clavicle and breast; on approaching the sternum at this level the dulness diminishes. The respiratory murmur absent where the sound is very dull; it is heard feebly, but without any râle, near the sternum. Over all this space, the voice exhibits a resonance which it has not elsewhere; the real tremor, however, which constitutes ægophony is not heard. In the other points of the thorax, that is, over the site of the two lower lobes, the sound is clear, and the respiratory murmur very intense. Cough not frequent, expectoration not profuse, and is catarrhal; pulse frequent and regular: no feverish heat of skin, digestive functions intact. (Blister over the left side of the chest.)

On the 13th, signs of gastro-intestinal inflammation, tongue red and dry: abdomen tympanitic and painful; diarrhœa; pulse more frequent, and skin hot. (Twenty leeches to the anus.) 14th. Slight delirium; tongue less red, and is now moist; great dyspnœa. (Twenty leeches to the neck; two blisters to the legs; ptisans and emollient lavements.) More leeches both to the neck and anus, and also sinapisms to the legs; but the patient continued to sink, and died on the 22nd.

Post mortem. Marasmus; some œdema of the dorsal surface of the left hand. Left side of the chest, from the first to the fifth or sixth rib, was occupied by a limpid, colourless liquid, which pushed the upper lobe of the lung of this side towards the mediastinum. The cavity which contains this liquid was limited inferiorly by false membranes, which extend from the ribs to the lung, and form a sort of septum which divides into two parts the cavity of the left pleura. The lung was lined by false membranes remarkably thick and firm. Their appearance presented considerable resemblance to that of inter-articular cartilages; in several points they present small nuclei of osseous substance. The upper lobe of the right lung presents a considerable number of small masses of a dull white, having the consistence of chalk soaked in water, and of a stony hardness in some points. Around these depositions of calcareous phosphate, the pulmonary substance was black as charcoal, very hard, and very difficult to be torn; in other parts the pulmonary tissue greyish, and engorged with a great quantity of frothy, colourless serum, was still pervious to the air. The melanosed parts occupied at least two-thirds of this lobe.

A small ulceration of the stomach in the middle of the great curve. The edges of this ulceration were formed of mucous membrane, which was white, and a little softened.

Nearer the great cul de sac there was a small rounded tumour, the size of a large pea, covered by the mucous membrane, which had remained intact beneath it; it was developed in the submucous tissue, and presented all the characters of tuberculous matter in the state of crudity. Liver small and easily torn. A considerable quantity of serum infiltrated the sub-arachnoid cellular tissue; there was some also in the lateral ventricles and spinal canal.

The seat of the effusion and its exact circumscription very well account for the signs afforded by auscultation and percussion. The existence of the dull sound, and the absence of the respiratory murmur in the upper lobe, should incline one to suspect rather pulmonary hepatisation than an effusion into the pleura. Over all the extent of this effusion the voice presented greater resonance than elsewhere; now this phenomenon is also found in the case of hepatisation. Finally, the pain which ordinarily marks the onset of pleurisies, was totally wanting in this case.

It is important to remark, not only as a fact of pathological anatomy, but also as a circumstance which may modify the treatment, the nature of the false membranes which lined the lung. They formed a kind of real plastron, which keeping the lung fixed in the narrow space into which the effusion had forced it, would not have allowed it to expand and return to its original volume, if the liquid contained in the pleura had been either absorbed or evacuated through the thoracic parietes. In some similar cases we tried in the dead body to inflate the lung, after previously evacuating the effused liquid; but we failed. This is one of the circumstances which may sometimes prevent the success of the operation of empyema; it is probably, also, in cases of this kind, that after the gradual absorption of the effusion, the lungs not being able to approximate the thoracic parietes, the latter were depressed in order to approximate the lung.

CHAPTER IV.

DOUBLE PLEURISIES WITH OR WITHOUT EFFUSION.

The simultaneous inflammation of the two pleuræ is always a very serious disease. It is so much the more dangerous, as it may be easily overlooked. In fact, as has been already well observed by M. Broussais, it is only in the smallest number of cases, that its commencement is marked by the acute, circumscribed, characteristic pain, which usually announces the commencement of pleurisy. It may produce death very rapidly, before any effusion has taken place, by the mere fact of its extent, and by the extreme dyspnœa which it occasions. When the effusion occurs on both sides at the same time, the equal diminution of sonorousness on the right and left, prevents us from ascertaining, by percussion, the existence of the double collection. In this case, on the contrary, auscultation afford valuable information. We may readily conceive how great the danger must be, however inconsiderable the effusion. If it take place rapidly, it is infallibly fatal in a very short space of time; if it take place but slowly, or successively, first on one side, then on the other, the case is not dangerous, and the patient may recover. If in this case the disease terminate fatally, this termination may be prompt, as in the preceding case; but the disease may also assume a chronic course, and not terminate in death until after a very long time. Death seems to supervene then, principally because the two lungs, compressed more or less forcibly, are no longer able to admit the quantity of air sufficient to produce a perfect hematosis: the results of which are marasmus, and the progressive deterioration of all the functions.

Case 19.—*Double pleuritis without effusion.*

A tailor, thirty-nine years of age, presented all the symptoms of an aneurism of the heart, when he entered the hospital in the month of October. The legs alone were infiltrated. The lungs and their appendages appeared healthy; a frequent cough of long standing, with expectoration of opaque mucus, announced merely a chronic inflammation of the bronchial mucous membrane. The respiration, which was very much embarrassed at the time of the patient's admission, became freer after some days, and the œdema of the lower extremities disappeared. On the 3rd of November, without any known cause, the respiration became suddenly accelerated. On the 4th he presented the following state: his face was pale, and expressed the most intense anxiety; the muscles of the face presented from time to time slight convulsive movements. He was half sitting up in his bed; inspiratory movements very short and frequent; he pronounced some words with difficulty and with panting. Properly speaking, he complained of no pain; but the entire chest was the seat of a very painful sensation, which he compared sometimes to a weight which smothered him, sometimes to a forcible constriction made on the thoracic parietes, and which was opposed to their dilatation. The respiratory murmur was heard every where very distinct, but weak; the chest also sounded well in every part. The pulsations of the heart presented nothing new.

Cough not frequent; character of the expectoration not changed; pulse exceeded 130; the skin was hot and dry, tongue whitish, abdomen free from pain, evacuations natural. What was the cause of this extreme dyspnœa, which appeared all at once with great alteration of the features, intense anxiety, and extraordinary frequency of the pulse, etc.? Did this cause reside in a momentary exasperation of the heart disease, in a pericarditis, in a diaphragmatic pleurisy? On this subject we could only form conjectures more or less probable. Here, however, whatever the cause of the symptoms might be, the indication was obvious. (He was bled to twelve ounces, fifteen leeches were applied to each side of the chest, mustard pediluvia, emollient drinks.) The blood taken from the vein presented a dense clot, which was buffed and surrounded by a great quantity of serum. After the bleeding, the dyspnœa was less for some time; but it soon re-appeared as before. In the evening and the night he raved.

On the morning of the 5th of November, intellects still disturbed. The inspiratory movements, which were extremely short and very frequent, were performed principally by small, abrupt, and as it were convulsive contractions of the diaphragm. (Blisters to the legs.) A little time after the visit, the patient was seized with violent hiccup; the respiration, which was still shorter and embarrassed, was finally arrested, and death took place in the evening.

Post mortem. The two pleuræ, through their entire extent, presented a bright red injection, which made them appear streaked with myriads of extremely delicate vessels, which crossed each other in different directions. In some places, they were covered with small albuminous concretions, sometimes extended like false membranes, sometimes deposited in isolated points in the form of miliary granulations. There was also in the right pleura, about an ounce of greenish, slightly turbid serum. The parenchyma of both lungs was very healthy, slightly engorged. The heart presented hypertrophy of the parietes of the two ventricles, with dilatation of their cavity. The aorta was remarkable for its extreme narrowness. The organs of the cranium and abdomen appeared healthy.

The double pleuritis, in this case, was the cause of that group of frightful symptoms not satisfactorily accounted for during life. What is peculiarly remarkable here is the absence of all pain, notwithstanding the extent and intensity of the inflammation; we mean the great dyspnœa, notwithstanding the free entrance of the air into the pulmonary vesicles, as well as the great rapidity with which death supervenes, though no organ essential to life was injured. Thus persons attacked with peritonitis often die in twenty-four hours. So extensive and acute an inflammation could not exist without sympathetically affecting the nervous system; this accounts for the convulsive movements of the face, as well as for the delirium. We may remark the peculiar mode of respiration, the convulsive-like contractions of the diaphragm, and finally the hiccup.

This example suffices to prove the great obscurity of diagnosis in double pleurisies, and the great danger with which they are attended, even before there is any effusion.

Case 20. *Double effusion formed without pain—Particular nature of the effusion on the right side.*

A coachman, sixty years old, entered the hospital in the July of 1822. For some months back he had pains in one of the dorsal and lumbar regions. The vertebral column presented nothing unusual; the extremities had their natural strength; no fever. Leeches were applied several times to the seat of pain, which was diminished; but the two lower extremities soon became debilitated and were the seat of habitual numbness. Two moxas were applied to the loins. The weakness of the upper extremities still increased; there was not, however, complete paralysis, and at the beginning of October the patient was still able to support himself on his legs. He now had some fever, and gradually wasted. But then new symptoms manifested themselves : the breathing was unusually difficult. The chest, when percussed, yielded a dull sound in the lower third of the left side ; the respiratory murmur was much weaker there than elsewhere, and the voice in this same part presented a peculiar resonance. A large blister was applied over the left side. The next day, 15th of October, the respiratory murmur was entirely absent over this side ; ægophony was no longer heard. The sound was dull from the clavicle and spine of the scapula to the base of the chest. The breathing was short and hurried ; cough rare ; expectoration gone. It was thought the left pleura was the seat of a considerable effusion.

On the 16th the dyspnœa and general anxiety were much greater than on the preceding days. On the left auscultation and percussion gave the same information ; but anteriorly on the right, on the level of and below the breast, the sound was become dull ; the respiratory murmur, which on the preceding day was very intense in this point, was scarcely heard there, and there was a very well-marked tremor of the voice. Posteriorly on this same side, the respiratory murmur was very well heard, without any change of the voice, or diminution of the sound. On the 17th and 18th dyspnœa still increasing; profuse diarrhœa. Died on the 19th.

Post mortem. A turbid greenish liquid, mixed with a great quantity of albuminous flocculi, was found in the two pleuræ ; but the effusion was deposited not in the same manner on both sides. On the left the liquid was, as usual, in contact with the ribs, and had pressed the lung on the lateral parts of the vertebral column. On the right, on the contrary, the lung remained in contact with the ribs, as well posteriorly as laterally ; a purulent liquid separated it both from the diaphragm below, and from the anterior mediastinum internally. False membranes, soft, and traversed by numerous vessels, lined both pleuræ.

An enormous quantity of white phlegmonous pus existed in the abdomen, on each side of the vertebral column, from the last dorsal vertebra to the fifth lumbar. Over this extent the psoas muscles had been as it were dissected by the pus. On the left the purulent collection did not pass beyond the ileo-vertebral articulation ; on the right it extended into the iliac fossa. The lateral surface of the body of the first lumbar vertebra was rough, unequal, and divested of its periosteum. The intervertebral fibro-cartilage was entirely destroyed ; the corresponding surfaces of the body of the two vertebræ were rough and blackish. The spinal marrow and its coverings presented no appreciable lesion, nor did the brain.

The double effusion in this case formed successively. The pain did not announce it on either side ; the collection on the left side had been in existence probably for some time when we observed some dyspnœa. It appeared to have formed slowly, and the respiration did not appear to be perceptibly embarrassed until it was now considerable. The dyspnœa did not become very intense, and the general symptoms did not really appear dangerous until some pus began to be effused also into the right pleura. But this latter effusion differed from the other, and from the ordinary cases, in occupying only the anterior part of the cavity of the pleura, and in pressing the lung directly backwards, instead of inclining it towards the vertebral column ; thence the existence of the dull sound, and of the ægophony at the anterior part of the thorax.

We may notice in this case,—

1st. The existence of a copious diarrhœa towards the close, without any apparent trace of intestinal inflammation ; 2ndly, the incomplete paralysis of the lower extremities, which recognised as its cause no appreciable lesion of the spinal marrow. It may be presumed that the nerves, bathed as they were in pus, had undergone some lesion which prevented them from completely transmitting the faculty of sensation and motion to the lower extremities.

CHAPTER V.

PLEURISIES COMPLICATED WITH OTHER DISEASES.

The most common complication of pleurisy is inflammation of the pulmonary parenchyma. We shall recur to this complication only in a very secondary manner; numerous examples of it are contained in the section which treats of pneumonia.

Case 21.—*Pleuritic effusion, with pneumo-thorax and pulmonary and intestinal tubercles.*

A German, thirty-five years of age, had been labouring under a cold for several months, when he entered the Charité. He then presented all the characters of pulmonary phthisis in the second stage.

About fifteen days after his admission, on the night of the 11th, he was suddenly attacked with an acute pain below the left breast. At the same time there was extreme difficulty of breathing. On the 12th, continuance of the pain; slight crepitous râle posteriorly on the left, on a level with the inferior angle of the scapula; in every other part the respiratory murmur was loud and clear; pulse hard, frequent; skin hot. (Twenty-four leeches to the side.) One hour after the visit, the patient expectorated a great quantity of frothy vermilion-coloured blood.

On the 13th, a continuation of the hemoptysis. (Bleeding to ten ounces.)

14th and 15th, hemoptysis ceased; pain gone; dyspnœa and fever continue.

On the 16th, the patient who, on the preceding days, had observed a rigorous diet, took some potage au riz; this had scarcely reached his stomach, when the hemoptysis reappeared. (Bleeding to six ounces; blister to one thigh; strict regimen.) The spitting of blood ceased in the course of the day.

Up to this period the chest, when percussed, presented its natural resonance in every part; respiratory murmur heard everywhere distinct, except on the left in some points, where a mixture of the mucous and crepitous râle was heard, probably the result of the presence of some small tuberculous cavities. May 17th, a new phenomenon engaged our attention. The respiratory murmur was no longer heard posteriorly on the left, though over this same extent the sonorousness of the chest was much greater than on the right, which had not occurred on the preceding days. M. Lerminier announced the very probable existence of pneumo-thorax. Mere emphysema, in fact, would not have occasioned the absence of the respiration to so great an extent.

On the day after, there was also under the left clavicle a complete absence of the respiratory murmur, and at the same time great sonorousness.

Up to the 28th, the patient, examined every day, presented no change with respect to percussion and auscultation. The dyspnœa was always considerable; cough frequent; the expectoration was three or four times bloody. An obtuse pain was felt from time to time on a level with the left breast. Profuse sweats every night.

28th. On percussing the chest, the patient sitting up, we discovered for the first time the existence of a dull sound on the left posteriorly, from the inferior part of the scapula to the base of the thorax. On practising succussion, according to the method of Hippocrates, there was heard the passing of a liquid on the left side of the chest. From this time we no longer had any doubt of there being a mixture of air and of liquid in the left pleura.

In the course of the month of August, the increase of the dull sound, and the slight separation of the ribs announced the progress of the effusion. This fluctuation of the liquid was still heard. Ægophony was never perceptible; general state less and less satisfactory; features very much altered. Copious perspirations, which we endeavoured, though ineffectually, to moderate with pills of acetate of lead; diarrhœa since the beginning of August.

In the beginning of September, the fluctuation ceased to be heard. The sound was very dull on the left, both posteriorly and laterally, to a little above the middle of the scapula. Higher up, both posteriorly and anteriorly, the chest sounded, but less than on the right. At this period we heard posteriorly a peculiar resonance of the voice, which approached very closely to ægophony.

On the 10th of September, the patient's ideas became very confused. On the 11th, he raved; pulse very frequent and very weak. On the 12th, the patient's four extremities became as cold as if he had been dead for the last twenty-four hours. He died on the following morning.

Post mortem. The thorax appeared a little more prominent on the left than on the right; the left side, when measured, was accordingly found to be larger by five lines.

A slight incision having been made at one of the upper intercostal spaces of the left side, no sibilous noise was heard, no air-bubble escaped; a litre and half of lemon-coloured serum, mixed with albuminous flocculi, filled the left pleura. Both the costal and pulmonary surfaces of this membrane were lined with albuminous concretions extended into false membranes. Some adhesions, rather solid, forming bands more than two inches long, united the apex of the lung to the ribs. The lung, which was very much compressed, was easily dilated with air blown into it. It, as well as the right, contained numerous tubercles, many of which were softened. Several tubercular lymphatic ganglions existed in the anterior mediastinum. Some crude tubercles were scattered under the intestinal mucous membrane. A greater number were already softened, and had ulcerated the mucous membrane. The mesenteric ganglia were tuberculous. Brain and its coverings remarkably pale; much serum in the lateral ventricles.

Did a gaseous effusion really exist in the pleura of this patient? We can scarcely question it, we think. By the mere existence of the pneumo-thorax may be explained several of the phenomena observed at different periods. It is thus, in our opinion, that these lesions succeeded each other, and thus we may explain by what group of symptoms each of them was announced. First, the appearance of the pain of side announced the coincidence of an inflammation of the pleura with hemoptysis. This inflammation gave rise at first to no effusion, as was indicated by the sonorousness and natural respiratory murmur being preserved. Subsequently this murmur ceased on a sudden to be heard over a great extent, and at the same time the sonorousness of the chest, far from diminishing, became greater than on the opposite side; the existence of a gaseous effusion into the pleura already inflamed then seemed evident. At a later period, the sound became dull interiorly, and on employing the hippocratic method of succussion, a liquid was heard on the left side of the chest. Now, such a phenomenon only supervenes where there is a mixture of air and liquid. The existence of the pneumo-thorax was even rendered still more evident by this new sign; but further it, together with the dull sound, announced the commencing of a liquid effusion into the pleura. This latter effusion increased still more, and according as it became still more profuse, the fluctation of the liquid is no longer heard. From this we thought that the liquid effusion had entirely succeeded the gaseous effusion, whether the latter had been absorbed, or whether the aeriform liquid, subjected to greater or less pressure, has dissolved in the liquid. In fact, the post mortem examination showed nothing in the pleura but the ordinary purulent collection; we should remember that in the last period of life the respiration was still heard a little superiorly and posteriorly, and that the sound was also less dull there. In this space the lung, being kept near the ribs by long bands, could have allowed but a very thin sheet of liquid to interpose itself between it and the thoracic parietes.

In this case, the nature of the lesions was so clearly indicated by the nature of the symptoms, that the examination of the body, made with the view of verifying the diagnosis, became almost superfluous.

This case presents to us the very rare instance of an effusion of gas into the pleura, without there being any communication between the cavity of this membrane and the exterior. Here the gas appears to have been a product of the exhalation of the serous membrane. Most frequently, on the contrary, pneumothorax is the result of a communication set up mediately or immediately between the bronchi and the cavity of the pleura.

CHAPTER VI.

RECAPITULATION;

OR,

GENERAL HISTORY OF PLEURISY.

146. In this recapitulation we shall follow the same course as that adopted in treating of pneumonia. Thus, we shall first state the anatomical characters of inflammation of the pleura; we shall then speak of the causes of pleuritis, of its symptoms, of its course, of its varieties, &c.

147. The pleura, when attacked, presents—1st, alterations of tissue; 2ndly, alterations of secretion. Besides, the lung, when compressed or displaced by the effusion, presents varieties of form, size, situation, and relations, which it is important to know. When a foreign body is introduced into the pleura of an animal, or a liquid somewhat irritating is injected into it, and if the pleura be examined a little time after, it is found to be red to a greater or less extent; but a careful examination soon shows that this redness is solely owing to the greater or less injection of the vessels which pass over the sub-serous cellular tissue: the membrane itself has retained its transparence, and no red vessel ramifies through it. The same phenomena may be observed in persons who, labouring under slight pleuritis, die of another disease. Should the inflammation be more intense, the serous membrane itself then presents vessels in greater or less number filled with blood; sometimes these vessels, not being very numerous, leave great intervals between them, and they scarcely disturb the transparency of the membrane; sometimes their number is greater, they become agglomerated, anastomose in a thousand ways, and so as to produce mere points, long streaks, large patches, and, finally, a uniform red tint to a greater or less extent; this last case is very rare. We still preserve in a state of dryness portions of pleura which present these different degrees of vascular injection. These different shades of inflammatory redness must not be confounded with the product of simple ecchymosis; sometimes, after chronic diseases, or certain severe fevers, effusions of blood merely passive take place on the external surface of the pleura and peritoneum, in the same manner as they are formed under the mucous membranes and under the skin. Very little care is necessary to distinguish these ecchymoses from an inflammatory injection.

In the majority of cases, the pleura, red or white, opaque or transparent, is not increased in thickness; we very rarely find it really thickened. The authors who have spoken of thickening of the serous membranes as a very common pathological phenomenon, evidently confounded the serous membrane itself with the false membranes which covered it.

The peritoneum, when inflamed, often loses a great part of its consistence; it becomes softened and ulcerated. We never have observed anything similar with respect to the pleura. We have sometimes seen it detached from the pulmonary surface with much more ease than in the healthy state, as if the fine cellular tissue which unites it to the lungs had participated in the inflammation and become friable. Thus, in enteritis, when the inflammation has extended to the sub-mucous tissue, the latter may be raised to a great extent without being torn.

The alterations of secretion presented by the inflamed pleura are more numerous and more varied than its alterations of tissue; but what is here remarkable is, that, in several cases where these alterations of secretion are most marked, the membrane presents no appreciable change in its texture. The serous liquid exhaled by the pleura in the healthy state is modified both with respect to its quantity and its qualities.

Its quantity may vary from less than an ounce to several pints. When this quantity is very considerable, not only is the lung so compressed as to occupy the least possible space, but the diaphragm also is pressed down, the result of which is a very considerable prominence of the abdominal viscera, and particularly of the liver on the right side, and of the spleen on the left. Stoll says that he saw the diaphragm so depressed in a case of this kind by a collection in the pleura, that a very perceptible tumour was occasioned by it in the hypochondrium. The ribs are separated, the intercostal spaces enlarged and bulging outwards very much; the mediastina also undergo some displacement, and deviate towards the side opposite to that on which the effusion exists. Lastly, in cases where the left pleura was the seat of the collection, the heart itself has been seen to lose its usual situation, to be directed to the right side, and its apex to approach so near to the sternum, that during life its pulsations are no longer heard except behind this bone and in the right part of the thorax. We have not had an opportunity of observing more than one case of this kind.

The liquid exhaled by the inflamed pleura presents a multitude of varieties; we shall here mention the principal of them.

There are cases wherein there is found only colourless or lemon-coloured serum, perfectly limpid and transparent. The slight redness of the serous membrane, the small number of membraniform concretions which line it, are then the only signs, often but very indistinct signs, by means of which inflammation may be detected, the existence of which had been indicated during life by unequivocal symptoms. At other times, and this is a more common case than the preceding, in the midst of a liquid which always remains limpid, some albuminous flocculi are seen to float, the greatest part of which is thrown down. Most frequently these albuminous flocculi, more abundant, tend to become dissolved in the serum, and disturb its transparency. In other persons there is found a liquid decidedly turbid, of a yellow, green, brown, or greyish colour, which is sometimes very thick, and as it were muddy. In fine, after several intermediate states, this liquid presents itself under the form of real pus, such as it exists in a phlegmonous abscess. In some rare cases, the pleura is filled with a peculiar liquid, which is neither serum nor pus; this liquid, usually deposited in compartments formed by false membranes, resembles either animal jelly half liquefied, or honey, or, better still, the matter contained in external tumours, known by the name of *meliceris.* Blood may also be effused into the inflamed pleura; but sometimes the red colour of the liquid is so light, that it seems to be merely serum mixed with a small quantity of the colouring matter of the blood. Sometimes, on the contrary, the pleura is found filled with a liquid altogether resembling the blood which comes from a vein ; real fibrinous clots still united to the colouring matter of the blood, or deprived of this matter, are collected towards the most depending part of the pleura. It cannot be doubted in this case but that natural blood was really exhaled by this membrane. The peritoneum, attacked with inflammation, also presents to us frequent instances of a similar sanguineous exhalation.

The different liquids effused into the pleura are always inodorous, unless a solution of continuity of the thoracic parietes or a pulmonary fistula establishes a communication between the cavity of the pleura and the exterior.

Aeriform fluids sometimes exist in the inflamed pleura, either alone, or more frequently mixed with a liquid. Their presence is principally ascertained—1st, by the hissing noise produced at the moment an incision is made into the ribs ; 2ndly, by the frothy state of the liquid. We might also satisfy ourselves of it by opening the thorax in water. In some circumstances these gases are evidently the product of an exhalation of the membrane ; but most usually they are found in the pleura only when the latter communicates more or less immediately with the bronchi.

A portion of the liquid exhaled by the pleura naturally tends to concrete and pass into the solid state. Thence the false membranes which present so many varieties with respect to their organisation, form, colour, extent, consistence, and thickness.

One of the most curious phenomena of pathological physiology is, no doubt, that of the organisation of false membranes. An amorphous liquid (*the coagulable lymph of Hunter*) is deposited on the free surface of the pleura ; it is scarcely exhaled when it becomes solidified ; it is first a soft and whitish substance, and is divided into a number of filaments which, by their interlacing, constitute a species of meshes, whence some serum is expressed. But in a little time signs of vitality manifest themselves in this apparently inorganic substance ; red points are developed in it ; these points, which are at first but few in number, and isolated, multiply, become lengthened into lines or reddish striæ, which traverse the surface of the albuminous concretion ; at last these striæ become real vascular canals, which soon get clear of the concretion wherein they were originally formed, join the vessels of the pleura, and then establish a communication between the circulation of the false membrane and the general circulation. Experiments on living animals, as well as observations on man also, have proved that this process of organisation sometimes takes place with incredible rapidity. In rabbits, whose pleuræ we had irritated artificially by injecting acetic acid into them, we found, at the end of nineteen hours, soft and very delicate false membranes, traversed by numerous reddish lines, which anastomosed like real vessels. On other rabbits whose pleuræ had received the same liquid, and which seemed to be placed in the same circumstances as the preceding, we found nothing similar at the end of a much longer time. Their pleuræ contained nothing but a serous or purulent liquid, with a mixture of albuminous flocculi entirely inorganic. We repeated the same observations on man. We met, for instance, false membranes which were already vascular in persons who died of a pleuritis at the end of a very few days. We saw no trace of them in other patients who had not died till after the lapse of several months. The organisation of false membranes does not depend then merely on the longer or shorter time which elapsed since their formation, and no general rule can be laid down with respect to the moment at which this organisation commences. It would appear that in this respect there are inexplicable individual predispositions, which in some accelerate the period of the process of organisation, and which in others retard it. We may remark here, *en passant*, that the greatest analogy exists between the mode of development of the vessels of false membranes, and their mode of production in the membrane of the yolk in the chick. We should note, however, a remarkable difference—namely, the inconstancy and irregularity of organisation in the false membranes, and, on the contrary, the constancy and regularity of this process in the membrane of the yolk.

The form of the false membranes of the pleura is very variable. Oftentimes they are miliary granulations separated from each other, and which might be readily taken for small tubercles, did they not differ in their intimate texture. This species of false membranes, which appear to be produced by a coagulable liquid deposited on the surface of the pleura in separate small drops, frequently co-exists with an effusion of limpid serum. At other times the pleuræ are covered to a greater or less extent, and even through their entire surface, by large concretions, which considerably increase their thickness. The surface of these concretions, more or less perfectly organised, is sometimes quite smooth and polished, sometimes rough, uneven, and mammillated, sometimes again traversed by very delicate filaments, which, by their interlacement, give it an areolated appearance. In a very considerable number of cases these concretions are elongated into bands, variable in form, size, and density, which extend from one of the surfaces of the pleura to the other, and constitute adhesions oftentimes remarkable for their length ; these adhesions traverse a great quantity of liquid in order to unite the pleuræ costalis and pulmonalis. Sometimes, being very numerous, they interlace in the midst of the liquid, and enclose it in a sort of compartments or cells, more or less regular, which they leave between them. Even when there is no more liquid effused, the pleuræ costalis and pulmonalis are at times found united by long bands, which allow the ribs to be separated from the lung to the extent of from one to two inches without laceration. The function of this organ would even be singularly interfered with, if, in all cases, the adhesions set up between the two surfaces of the pleura did not allow the latter to separate a little from each other. In fact, every time that anything like a deep inspiration takes place, the relation of the ribs and lung changes ; whilst the former are raised the second descends, and consequently each of the points of the lung is no longer in contact with the same point of the thoracic parietes. We may satisfy ourselves of this fact by exposing an intercostal space in an animal.

Adhesions which are soft, easily torn, and of an albuminous appearance whilst they are recent, become changed sooner or later into a real cellular tissue, which establishes an intimate union between the two surfaces of the pleura. It is in this state they are found in persons who have had old pleuritic affections.

Are the cellular adhesions of the pleura ultimately absorbed ? We know no direct fact which proves it ; but analogy would lead us to admit it. Beclard has cited a case which demonstrates the possibility of such an absorption of the cellular adhesions of the peritoneum ; also, in this latter membrane, as in the pleura, adhesions may exist to a great number without giving rise to any morbid phenomenon. We found in an individual who several years before had had the symptoms of a peritonitis, all the convolutions of the small intestines united by a cellular tissue sufficiently loose to allow of a slight friction between them. This individual, during a long stay in the hospital, never complained of any pain nor of any feeling of constriction in the abdomen. With respect to the cellular adhesions of the pleura, they are so well known to be harmless, that it is perfectly useless to dwell longer on this point.

False membranes are most frequently colourless ; often also the yellow, grey, or red tint which they present, is communicated to them by the liquid with which they are in contact. It is not uncommon to find the peritoneum covered with false membranes of a deep black colour. We never met such a colour in the false membranes of the pleura.

Their thickness is sometimes not greater than that of the pleura itself. They are raised from the surface of the latter in the form of very fine pellicles, entirely resembling the tissue of the pleura. Often also several of them are laid one over the other, which are removed in successive layers; it might then be supposed that it is the pleura itself which is composed of several laminæ. The existence of false membranes of this kind may also be very readily overlooked. We never met them except in cases of chronic pleurisy. They are found more commonly still on the surface of the peritoneum under the same circumstances.

However, in the majority of cases, the thickness of false membranes far exceeds the natural thickness of the pleura; this thickness appears at first sight so much the greater, as there are always several false membranes laid one over the other; they then often acquire such solidity and density, that they double in a manner the thoracic parietes, and so that when a more or less extensive portion of these parietes has undergone a solution of continuity, they may supply these same parietes, forming a sort of breast-plate (plastron), which sufficiently secures from external violence the organs contained in the thorax. These false membranes, when applied over the lung which has been separated from the ribs by an effusion, form a barrier which prevents the lung from returning to its original state after the effusion has been absorbed or evacuated. As we have already seen, this barrier may even oppose an invincible resistance to the efforts made after death to distend the lung by inflation.

In the very great majority of cases where an effusion exists in the pleura, whether it has been announced or not during life by pain, fever, or other signs of inflammation, we find in the pleura evident signs of inflammation derived from the presence of false membranes, from the nature of the effused liquids, or, in fine, from the appearance of the pleura itself. Thence we must conclude that the effusion of serum into the pleura, without previous inflammation or without mechanical obstacle to the circulation, is an extremely rare disease. Even in the case of heart disease, hydro-thorax appears much less common than ascites.

Accidental tissues of different kinds are frequently developed in the inflamed pleura. Thus false membranes sometimes pass into the fibrous, cartilaginous, or even bony state; but the accidental tissue most frequently developed there is certainly the tuberculous tissue; our cases have given numerous instances of this. These tubercles arise even in the midst of false membranes; they are ordinarily very numerous, and appear often to multiply with great rapidity. We have found false membranes already filled with tubercles in persons who had died of pleurisies the duration of which had not exceeded fifteen days. The rapidity of such a development is not a phenomenon devoid of analogy: we have elsewhere cited several cases, which prove that the different accidental tissues, which, in the most ordinary cases, are developed slowly, and are characterised by the symptoms of a chronic disease, arise and increase in some cases with an astonishing rapidity, and produce an acute affection. We shall here cite two cases of this kind, in which, after a slight peritonitis, cancerous tumours in one case, and tuberculous tumours in the other, were developed, and attained an enormous size in a very short space of time.

A military man, fifty-one years of age, entered La Charité, complaining of rather severe pains around the umbilicus for the last eight days; there was a little fever; stools natural, as also the tongue; the day after the abdominal pain was increased; countenance altered; pulse frequent and small; peritonitis more marked. (Leeches were applied.) Subsequently the abdominal pains were somewhat lessened, but the abdomen began to swell; there was, however, no manifest fluctuation; the abdomen, when percussed, yielded a dull sound, whence we could not refer the tumefaction to the development of gas in the intestines. Some few days after we detected an irregularly rounded, very moveable tumour, extending from the umbilicus to the pubis; this became still more perceptible, and we were soon able to trace it into the iliac region and into the flank of the same side, where it presented a great number of knobs, and was much more painful than around the umbilicus. From a fortnight to three weeks after this the pains became excruciating, and we found the tumours evidently larger every morning than the preceding day. Delirium now set in and the patient died.

On opening the body, we found the umbilical region, the two flanks, the hypogastrium, and the two iliac fossæ, occupied by a tumour inserted above into the colic edge of the stomach, concealed below by the pubis, over which it was prolonged.

When detached from the stomach and turned from above downwards, this enormous tumour showed behind it the arch of the colon to which it adhered, the small intestines covered with membranous exudations, the cæcum, as also the ascending and descending portions of the colon. It was very hard, thick, rough, and studded on its surface. When cut into it presented all the appearance of scirrhus in the crude state ; in other points small cavities were formed, some of them round, some oblong, and others anfractuous. (Scirrhus in the state of softening.) With this tissue also there was intermixed another tissue of an opaque white (encephaloid tissue in the crude state) ; in two or three points only there existed a pulpy, reddish substance, resembling cerebral matter when beginning to putrify (encephaloid tissue in the state of softening) ; and, lastly, in some places the white colour of the preceding tissues was mixed with rather a deep brown colour, indicating probably the commencement of melanosis.

The above fact has but few analogous to it in the annals of science. Thus in the space of less than five weeks, after a slight peritonitis, a cancerous tumour attacked the epiploon, acquired every day an increase perceptible to the eye and touch, and doubled in a manner the entire anterior lining of the abdomen.

In this patient, the acuteness of the pains and of the fever, and his frightful wasting, were proportioned to the rapidity of development of the accidental tissues. In the following individual, who will present to us the instance of a tumour whose growth was still more rapid, we observed neither pain nor fever, and the strength also was rather well retained.

A tailor, twenty years of age, of a lymphatic temperament, an inhabitant of Paris for the last seven months, worked and slept during January and February on a moist ground floor ; towards the middle of February he observed his abdomen to become unusually large ; no pain ; wasting of the face and limbs ; towards the beginning of March, profuse diarrhœa ; abdominal pains increased on pressure ; appetite lost ; strength diminished. During March, diarrhœa appeared and disappeared several times ; size of abdomen increased. He entered the Charité in the beginning of April, and presented the following state :—

Countenance pale ; emaciation of the limbs ; abdomen large, and painful only on considerable pressure ; fluctuation evident ; only one liquid stool in the twenty-four hours for several days ; no fever ; breathing free.

The ascites was considered by M. Lerminier as the result of latent inflammation of the peritoneum. To remove the inflammation, and effect the absorption of the effused fluid,—such were the indications to be fulfilled. (Leeches to the abdomen and anus ; venesection ; emollient fomentations ; diuretics and diaphoretics were prescribed.)

Under this treatment the ascites lessened and the urine became more copious and clearer ; the skin was moistened but once.

On the 20th of April, fluctuation no longer perceivable ; but we easily discovered, on feeling the abdomen, that the small intestines were united into a single mass.

Nothing now occurred from this time up to the 7th of May. The patient found himself much better than at the time of his admission, notwithstanding the great losses of blood.

On the 7th of May, a large mercurial plaster was applied to the abdomen ; no pain felt ; patient walked about and was free from fever. We were astonished on the 21st, when, on raising the plaster, we found, instead of the intestinal convolutions, a large tumour occupying the umbilicus, the lower part of the epigastrium, the left flank, the hypochondrium of the same side, which seemed also to be prolonged behind the false ribs of the left side. This site of the tumour gave it considerable resemblance to the enlarged spleen. However, no cause could account for this rapid development of the spleen; on the contrary, we know that the great epiploon might very rapidly acquire an enormous size. The absence of fever also seemed to confirm our diagnosis, as in this individual an extensive peritonitis had also been developed without pain and fever.

The patient, convinced that he was convalescent, left the hospital on the 1st of June. On the 2nd of August, he returned in the most deplorable state; since his going out the symptoms of pulmonary phthisis had declared themselves. The abdominal tumour had very much increased; it was hard, and studded with a great number of knobs. He died four days after his return.

On opening the body, we found that the great epiploon had attained at least eight or ten times its natural thickness. This increase of thickness was owing to large tuberculous masses developed between the laminæ of the epiploon; several were beginning to soften. Most of the mesenteric ganglions were also tuberculous. Behind the epiploon the small intestines were observed connected together by false membranes, in the substance of which enormous tubercles were also developed. Immense tuberculous cavities in the two lungs; the other viscera were healthy.

Let us recapitulate in a few words the different phases or periods of this interesting disease.

First period.—Development of peritonitis without pain and without fever.

Second period.—Ascites, the result of peritonitis; disappearance of the serum under the influence of copious blood-letting.

Third period.—Organisation of the albuminous flocculi, which, not being absorbed, as in the serum, were changed into false membranes. Adhesion of the intestines easily recognised through the abdominal parietes.

Fourth period.—Very rapid formation (in fourteen days) of the tuberculous tumour of the epiploon; still the general state of health excellent; return of strength; total absence of fever! . . . . In this state the patient left the hospital: he observed no particular regimen, and under the influence of the irritating causes to which he was subjected, the process of *tuberculisation* increased in the peritoneum and extended to the lungs, hectic fever was lighted up, and the patient sunk rapidly.

When this young man left the hospital, no symptom indicated any affection of the lungs, and in less than two months the pulmonary tubercles increased, softened, and formed large caverns.

It is very evident that in the different cases which we have cited, and particularly in the case where tubercles were developed within false membranes, the formation of accidental tissues was consecutive to an inflammatory state. It appears to us very reasonable to admit that inflammation, having a tendency to modify the texture of the parts which it attacks, and to alter their mode of nutrition, must for that same reason favour the production of the accidental tissues; but observation also obliges us to add that this production only takes place as far as there is a predisposition on the part of the individual; for how often do we find no trace of these tissues, though the patients had suffered long and violent inflammations, whilst in others we find these same tissues to be produced after the slightest irritation?

The different modes of alteration now described may exist in both pleuræ at one and the same time, or in one only; the inflammation even may occupy only a more or less accurately circumscribed portion of a single pleura. It often happens, for instance, that an effusion is limited and confined to a small space by false membranes variable in form and thickness. The portion of pleura lining the diaphragm, that which extends between the pulmonary lobes, or which lines the anterior mediastinum, etc., may be solely and separately attacked with inflammation. Thence several varieties of pleurisies, to which we shall advert presently.

The lung of the side where the effusion exists should engage our attention, as well with respect to the different position which it assumes, as also with respect to the alterations of texture which it may undergo.

In the most ordinary cases the effusion has a tendency to press the lung against the vertebral column. When the collection is very considerable, the lung now exists only in the form of a thin lamina, occupying a very small space along the spinal canal ; and if it is covered with thick false membranes, one would suppose at first view that it has completely disappeared. It is in cases of this kind that it has been said that the lung was destroyed by suppuration ; it is, however, intact, and inflation commonly restores it to its natural size. At other times the lung is not compressed to its entire extent towards the vertebral column ; one lobe only, for instance, is compressed by the effusion. Thus we have seen the lower lobe alone thrown towards the spine, whilst the upper lobe, which retained its ordinary place, formed a real vault which limited the effusion superiorly. Another time we saw the lung, instead of being carried towards the vertebral column, pressed, on the contrary, towards the ribs, both posteriorly and laterally, and the liquid occupy the anterior and internal part of the cavity of the pleura. Lastly, in a case of effusion almost entirely serous, the three lobes of the right lung, which were widely separated from each other as far as the root of the organ, and having lost but about one-third of their ordinary size, floated, free from all adhesion, in the midst of the liquid. These different positions are very necessary to be known, inasmuch as they modify several symptoms, as we shall see.

The extremely small space which the lung may be reduced to occupy in cases of considerable effusions, without its texture being altered, proves how different its apparent volume, owing to the air which distends it, is from its real volume. In this state the lung no longer crepitates ; it is dense, sinks in water ; appears to be nearly reduced to the state of the lungs of a fœtus which has never respired, or whose respiration has been but very incomplete ; its smooth appearance, and the difficulty with which it is torn, distinguish it sufficiently from a hepatised lung.

Sometimes a pleuritic effusion and inflammation of the pulmonary parenchyma may exist simultaneously ; but this complication is uncommon.

We shall not dwell here on the occasional causes of pleurisy, such as the impression of cold air, the introduction of cold drinks into the stomach, the sudden suppression of perspiration, or of any evacuation whatever kept up for a long time. We know, for instance, that after the amputation of a limb affected with white swelling effusions of pus are often formed in the pleura.

External violence on the thoracic parietes sometimes occasions pleuritis.

Inflammation of the pleura recognises also for a frequent cause certain organic lesions of the lung. Thus inflammation of this organ almost always occasions a slight inflammation of the enveloping membrane, and it is much more uncommon to find pneumonias without pleurisy than pleurisies without pneumonia. Pulmonary tubercles, whilst still crude and few in number, very frequently occasion slight partial pleurisies, which are announced particularly by pain, and which give rise to cellular adhesions of the pleura, adhesions which are nearly constant in phthisical patients. When tubercles are immediately developed under the pulmonary pleura, they cause a more intense pleurisy, and one which generally terminates in effusion. Finally, among the organic causes of pleuritis we must place solutions of continuity of the lung on its external surface, the result of which is a free communication between the cavity of the pleura and the bronchi. This solution of continuity depends sometimes on mere tearing of the pulmonary parenchyma without any other accompanying lesion, sometimes on the opening into the pleura, either of a tuberculous excavation, or of a gangrenous mass, or on the sanguineous effusion constituting pulmonary apoplexy. The pleurisies produced by this cause are frequently partial ; the purulent collection is circumscribed by false membranes, which, arising from the edge of the pulmonary fistula, form partitions which are attached by their other extremity to some point or other of the thoracic parietes. These pleurisies, which are ordinarily acute, sometimes take on a chronic character, and may even be more or less completely latent : thus the peritonitis, which is the result of an intestinal perforation, sometimes presents itself also in a chronic form.

148. Let us now pass in review the different symptoms which announce the existence of pleurisy.

The pain, one of the most characteristic signs of this disease, presents numerous varieties with respect to its seat, its intensity, and its duration. Most generally it is felt on a level with or below one or other breast, though the inflammation which it announces exists over a much greater extent. It also manifests itself, but much more seldom, in other points. We have seen it felt, for example, in the hollow of the axilla, under one or other of the clavicles, along the sternum, in the supra and infra spinous fossæ of the scapula. At other times the pain occupies all one side of the thorax ; it extends, for instance, either laterally from the hollow of the axilla to the last ribs, or anteriorly from the clavicle to the base of the chest. In some cases, it prevails principally along the cartilaginous edge of the false ribs ; this is particularly the case when the inflammation has attacked the portion of pleura which lines the upper surface of the diaphragm. In this latter case it occupies very often one or other of the hypochondria, is felt at the epigastrium, and extends even to the flank, so that it might be considered as the sign of an abdominal affection.

The pleuritic pain, whatever be its seat, is increased by percussion, by intercostal pressure, by lying on the affected side, by inspiration, by the cough and the different movements of the trunk.

In several patients this pain is very acute, either in a continued form, or only at intervals. Patients are then in a state of great anxiety : they make but very short inspirations through fear of increasing the pain : they have an extraordinary dread of the slightest effort of coughing. In other individuals, the pain which was very moderate, is felt only on making deep inspirations ; it is scarcely increased by percussion and pressure. Finally, there are certain pleurisies with or without an effusion, which are not indicated by any pain, either at their onset, or during their progress. We never should lose sight of the possibility of the existence of these pleurisies which are entirely free from pain. It should be known that the pleura, as well as the serous membranes of the pericardium and abdomen, may be inflamed, be filled with pus, be covered with false membranes, be disorganised, without these serious changes being announced by any species of pain.

The pain usually exists from the commencement of the pleurisy. Sometimes it is wandering and fugitive, and it is not till the lapse of some days that it becomes fixed and continued. In this case it is often taken for a mere rheumatic pain. It must be acknowledged, in fact, that it is often very difficult to distinguish the pain, which has its seat in the muscles of the thoracic parietes, from that which depends on an inflammation of the pleura. This latter, to be sure, is generally accompanied by more serious symptoms ; however, on the one hand, mere muscular pain may be accompanied with fever and dyspnœa, and on the other hand the pain may be owing to an inflammation of the pleura, though we may observe neither difficulty of breathing nor acceleration of the pulse. With respect to the local signs : the only ones which can have any value to establish the distinction in question, are, 1st, the increase of pain by slight pressure made on the ribs, as also in the intervals between them ; 2ndly, the great extent of the pain ; 3rdly, its inconstancy.

These different signs seem rather to announce that the pain has its seat in the muscles ; but they cannot afford an entire certainty of it.

After having been very acute during the commencement, the pain usually diminishes in intensity, it becomes very dull, and ceases even entirely long before the termination of the disease ; this, at least, is the most general case. Sometimes, after having disappeared, it shows itself anew with great violence ; this is a sure sign of the return of the inflammation.

It is to an inflammation of the pleura that we must attribute the stitch in the side which marks the onset of most pneumonias. It is also to pleurisies, less remarkable for their severity than for the frequency of their return, that we must refer the pains in the chest in the course of phthisis, and which are felt principally under the clavicles, in the hollow of the axilla, between the shoulders at the upper part of the dorsal region, that is, in the points where a greater number of cellular adhesions is found after death.

149. The breathing is usually impeded ; the inspiratory movements are short, hurried, and occasionally in jerks (saccadés). As long as there is no effusion, the dyspnœa is solely the result of the pain which opposes the free contraction of the muscles to which the chest owes its dilatation. Often even the latter is perceptibly less on the side where the pleurisy exists. When the effusion has taken place, it may be readily conceived that the difficulty of breathing may be directly proportioned to the quantity of the effusion. Such is generally the case ; there are, however, numerous exceptions in this respect. It would certainly never be admitted *a priori*, that there are persons whose breathing does not appear impeded, though one of the pleuræ may be the seat of an effusion considerable enough to have dilated the side of the chest where it exists. Not only do these patients seem to have no dyspnœa, when they remain quiet in their bed, but they even speak, get up, walk, and make long journeys without their breath becoming so short as to make them complain of it. This absence of dyspnœa is met not only in cases where the accumulation of fluid has taken place slowly ; it is also observed in persons whose pleuritis has terminated in a few days by a profuse effusion. Some feel their breathing so free, that they cannot be persuaded that their chest is affected. These facts prove that the breathing may continue to go on freely, though it may be only a single lung which receives air. Here pathological observation is in accordance with experiments on living animals. In order that this happy result should supervene, it is necessary that the inflammation should be arrested, that the fever should cease, and that the liquid which fills the pleura should be brought to the conditions of a liquid contained in a natural reservoir, as bile in the gall bladder, urine in the bladder. But from the circumstance that the breathing does not seem to be, in this case, manifestly impeded, we are not to infer that, in persons one of whose lungs has become impervious to air, the health can be as perfect as if the two lungs were able to act. Observation proves, that at the end of a longer or shorter time these patients become emaciated, all their functions become languid, so that if the effusion is not gradually absorbed, they die, in consequence no doubt of defective hematosis.

With respect to the greater or less freedom of breathing, patients labouring under pleuritis with an effusion similar with regard to the quantity and quality of the liquid may be divided into three classes. In some the dyspnœa does not cease to be considerable from the commencement of the pleurisy to the termination, which is then constantly fatal. In others the breathing is at first very much impeded, then the dyspnœa diminishes, and ultimately disappears before the absorption of the effusion. In others, in fine, both from the onset, and during the progress of the affection, the breathing always continues very free.

The movements of the elevation and depression of the thorax undergo modification connected with some varieties of pleurisy. Thus in costo-pulmonary pleurisy the breathing is principally diaphragmatic; on the contrary, in inflammation of the pleura lining the diaphragm, this muscle becomes immoveable, and the dilatation of the thorax is principally the result of the elevation of the ribs.

150. The cough never occurs in kinks; it is small, as if cut short, and more or less frequent. It may even be entirely wanting, though the inflammation is intense and a considerable effusion exists in the pleura. This total absence of cough has been well ascertained by us in more than one case; it is easy to see that the cough may very naturally not show itself in persons not very irritable, whose bronchial mucous membrane is not symptomatically irritated by inflammation of the pleura. We should not forget then that a very severe pleurisy may exist, though the patient may have no cough.

151. When the cough exists, it is dry, or accompanied by an expectoration purely catarrhal. Aretæus clearly laid down the difference between pleuritis and pneumonia, with respect to the expectoration. There are scarcely any sputa, he says, in pleuritis, *sputa vix exsecreta*, whilst they are more profuse and bloody in the case of pneumonia.

We do not find ideas so clear either in the writings of Hippocrates and Galen, or in the works of several physicians of the two last centuries, who seem to have often confounded the symptoms of these two inflammations.

When pleuritis has terminated in effusion, the expectoration always remains catarrhal. Sometimes, however, when a communication is set up between the cavity of the pleura and of the bronchi, the effused liquid is discharged through the trachea, and is found in the expectoration. The particular nature of the sputa, and the manner in which they are thrown up, are generally considered as unequivocal signs, by help of which we may readily recognise the existence of a pleuritic effusion opening into the bronchi. Thus the extreme fœtor of the sputa, their alliaceous odour, or an odour similar to that of phosphuretted hydrogen, has been considered one of the surest marks that the sputa which present this odour arise from a pleuritic effusion. But we have observed a similar fœtor in persons affected with simple chronic bronchitis (see preceding part); these latter cases are however very rare. On the other hand, we have seen patients whose sputa were inodorous, or but very slightly fetid, though there was found in them a communication between the cavity of the pleura and the air-passages. It is said that in cases of this kind a liquid has been easily made to pass from the cavity of the pleuræ as far as the large bronchi, but that it has been impossible to force the air from the bronchi into the pleuræ, by reason of a peculiar disposition of the air-tubes. It has been then thought that the same was the case during life, and that the sputa remained inodorous, because the air, not being able to penetrate into the cavity of the pleuræ, had not been in contact with the purulent collection.

The other qualities of the sputa, such as their colour, consistence, and form, may also be found in chronic bronchitis.

It is also an opinion generally laid down, that in the case where the matter of the effusion has been discharged through the lung, this evacuation takes place suddenly, and in great quantities at the time; the patient seems really to vomit pus: but this can only occur where a large opening is suddenly made. If, on the contrary, the opening is at first small, and enlarges only by degrees, it is clear that the evacuation of the pus should take place but slowly, and in small quantity at the time. Now, in this latter case, it is very difficult to ascertain the real origin of the matter expectorated; at the very most it can only be presumed, from the aggregate of the symptoms which indicate the existence of a pleuritic effusion; the diagnosis would acquire additional certainty, if these symptoms were observed to disappear according as the expectoration is established. In the case of a sudden discharge of a great quantity of pus, it cannot be affirmed that the liquid discharged has come from the cavity of the pleuræ; for it may also come either from a vast tuberculous excavation, into which a large bronchial tube has opened, or from the pulmonary mucous membrane itself.

What do these remarks prove? This, that here, as in many other cases, we should not judge from a single sign of the nature of a disease.

The discharge of a pleuritic collection through the bronchi may be followed by restoration to health, or by death. In the first case, after the abscess (*foyer*) has been emptied suddenly or gradually, its parietes cease to secrete pus anew; they approximate, and unite by adhesions which become more and more intimate, and the patient recovers. It is very advantageous then that the collection should empty itself but slowly, in order that the lung, which has been a long time compressed, may allow the air to penetrate it gradually, and thus recover its original size. In the second case the patient often dies asphyxiated; at other times the exhaustion occasioned by the profuse morbid secretion going on in the pleura, carries him off more or less rapidly. We shall cite here a somewhat curious case on this subject, contained in the *Sepulcretum* of Bonetus. It is that of a patient, in whom a sword penetrated through an intercostal space into the interior of the chest: but little blood flowed from it. The external wound was cicatrised in a little time; but the patient, who thought himself cured, felt that his breathing was no longer free; his pulse was habitually feverish; he had a dry cough, and wasted away in a frightful manner. Suddenly he was seized with a violent fit of coughing, and expectorated an enormous quantity of purulent matter. His recovery was rapid and complete. It is probable that in this patient a bronchus, perforated perhaps by the sharp instrument, opened a passage to the pus collected in one of the pleuræ.

This termination of chronic pleuritis is rather uncommon. In most of the cases where a purulent collection has been found in the pleura with pulmonary fistula, the cavity of the pleura did not communicate directly with the bronchi, but with a tuberculous excavation of greater or less depth, or a gangrenous ulcer; in this case there had first been an opening of this accidental cavity into the pleura, then consecutive pleuritis.

152. Decubitus on the affected side has been considered as one of the pathognomonic signs of pleuritis with effusion. Here is what our observation has taught us on this subject; in the great majority of cases, whether no collection as yet exists, or whether there is effusion already, the patient lies on his back; several patients have, however, a perceptible tendency to incline a little towards the affected side (diagonal decubitus); it is certainly but the smallest number which lie entirely on the side where the effusion exists. For this it is necessary that there should be no longer any pain, and that the effusion should be very considerable. As long as there is fever and dyspnœa, decubitus on the side opposite to that of the effusion is impossible. When the pleuritis becomes latent, and when, notwithstanding the existence of a copious collection in one of the pleuræ, there is no longer either any perceptible difficulty of breathing, or febrile disturbance, then lying on the affected side often perceptibly hurries the breathing, and becomes painful to the patient. Finally, some placed under the same circumstances can lie in any position; they lie alternately either on the back, or on either side, without the dyspnœa being increased in any of these positions.

When the diaphragmatic pleura is the particular part inflamed, lying in the horizontal position often ceases to be possible; the patients continue to sit up in the bed, they incline the trunk forwards more or less, as if this position alleviated their pain. This sign, however, is not so constant as not to be sometimes wanting.

From the preceding observations it follows that in the majority of cases of pleuritis, with or without effusion, decubitus affords no sign which can detect the nature of the disease. We should add, however, that under some circumstances decubitus on the back, with slight inclination towards the side of the effusion, or entire decubitus on this side, are so marked, that they alone, without further examination, may incline us to suspect the existence of a collection in the pleura. We have seen, for instance, phthisical patients who, after having for a long time lain indifferently in all positions, could subsequently lie only on one side through fear of suffocation. This unusual mode of lying inclined us to examine the state of the chest, and we often ascertained the presence of an effusion, which had formed imperceptibly, without well-marked exasperation of the symptoms of the original disease, and often even without pain.

153. Among the signs which we have now passed in review, none can be really considered as pathognomonic, none can announce with certainty the existence of a pleuritic effusion. However, if each of these signs, taken separately, has little value, their combination may give rise to probabilities which are almost equivalent to a certainty. But it still remains for us to examine the value of other more positive signs, and which, added to the preceding, render the diagnosis of pleurisy almost always easy and sure : these signs are afforded by measuring the thorax, by percussion, and by auscultation.

154. In a certain number of cases, the side of the chest where the effusion has its site, becomes evidently larger than the opposite side. Should the affected side be larger than the other by five or six lines, this enlargement is perceptible to the sight; but in this point one may be very easily deceived, and we should be certain that one side of the chest is really dilated, only when it has been measured comparatively with the other by means of a riband, one extremity of which is fixed on the spinous process, and the other on the middle of the sternum. In no case have we seen this dilatation exceed an inch and half. In this state of dilatation, the ribs and their cartilages are in the situation in which they are found during deep inspirations ; the intercostal spaces are very much protruded, and go beyond the level of the ribs ; an evident fluctuation may sometimes be perceived in these same spaces through the muscles. When these symptoms exist, no doubt can be raised regarding the nature of the disease, for mere hepatisation of the lung never produces them. It is principally after the existence of these symptoms that the old surgeons determined on performing the operation of empyema. But dilatation of one of the sides of the chest is far from being a constant phenomenon ; it may not even exist where several pints of liquid are effused into the pleura, and where the compressed lung is impervious to air. The dilatation of the chest on the affected side may take place in a very short time : we have sometimes found it carried to a very high degree from the fourth or fifth day of an acute pleuritis.

When the effusion begins to be absorbed, and any cause prevents the lung from dilating and approaching sufficiently towards the ribs, the latter are perceived to become depressed in order to make up for the vacuum which exists between them and the lung. The side of the chest where the effusion existed, then becomes narrower than the healthy side. Laennec has given some valuable observations on this subject in his work. This partial or general narrowing of one of the sides of the chest may exist without at all interfering with health.

155. As soon as a slight effusion commences in the pleura, it is announced by diminished sonorousness of the thoracic parietes on the side where it exists. According as the effusion increases, the thorax, when percussed, yields a sound which is constantly becoming more dull. At first this dulness of sound exists only inferiorly, then it is heard over the entire extent of the affected side, from the supra-spinous fossæ and clavicle to the base of the thorax.

When there is double effusion, the sound is equally diminished on both sides at once ; and, if the collection is not profuse, the diminished sonorousness, equal on the right and left, may not be remarked, or may be considered as natural. It is well known, that in several persons enjoying very good health the chest, when percussed, yields much less sound than in others who appear placed under the same circumstances.

In some cases of circumscribed effusions, the dulness also exists only over a limited space. Thus in one individual we discovered dulness of sound only at the middle and lateral part of one of the sides of the chest; in another we noticed it only on the level of the costal cartilages, and behind a part of the sternum.

In other cases of circumscribed effusions, the sonorousness of the thoracic parietes is not diminished in any part, and the diagnosis then becomes very obscure. This occurs in several cases of interlobular or diaphragmatic pleurisies, or again when the inflammation is confined to the portion of pleura which lines the inner surface of the lung and the mediastina.

It should be mentioned here that the pain sometimes renders percussion entirely impracticable.

156. When in an individual affected with pleuritis, with or without effusion, we apply either the naked ear or the stethoscope to the chest, we obtain more varied and more precise signs than those afforded by percussion.

From the onset of the disease, when there is not yet any effusion, whilst the pain is very acute, the respiratory murmur is perceptibly weaker on the side where the pain exists, than on the opposite side. On this same side the thoracic parietes are much less dilated. Percussion, when it can be employed, yields a sound equal on both sides. Such are the phenomena observed at this period; they may be explained in this way: the respiratory murmur is weaker on the affected side, because the intensity of the pain instinctively inclines the patient to dilate the thoracic parietes of this side much less than the opposite. Thence a diminution in the quantity of air which enters the lung in a given time. This is so true, that if the pain is less acute the thorax is dilated equally on the two sides, and there, also, the respiratory murmur on the two sides is equally intense.

From the time the effusion begins to form, the respiratory murmur is a little weaker than on the healthy side. According as the effusion increases, the respiratory murmur becomes still weaker, whilst on the other side it acquires much greater intensity than in the natural state. What should be well remarked is, that when the effusion is already sufficiently considerable, the respiratory murmur continues to be heard, but only much more feebly than on the side where there is no effusion. We have heard it very distinctly in a case where the pleura contained more than a pint of liquid. Lastly, when the effusion becomes still more profuse, the respiratory murmur ceases entirely, either only in the inferior and posterior part, or through the entire extent of one side of the chest. In consequence of the variable positions which the lung, compressed by the liquid, may assume, the signs afforded by auscultation, with respect to the presence or absence of the respiratory murmur in certain parts, may present some anomalies which it is important to notice. Thus, in the very great majority of cases, the lung is entirely compressed towards the vertebral column, and the respiratory murmur continually ceases to be heard from below upwards, anteriorly and posteriorly, the patient being supposed to be sitting in his bed. But the lung, instead of being inclined towards the vertebral column, is compressed directly from before backwards, and continues applied to the ribs in the form of a somewhat thin lamina. Then the respiratory murmur is no longer heard anteriorly, whilst posteriorly it is still heard. The lower lobe of the lung may be retained in its ordinary place by old adhesions; effusion can then take place only in the space occupied by the upper lobe; the respiratory murmur is wanting only in this part, and this unusual circumstance may cause one to mistake the real nature of the disease.

When the effusion is considerable, we have said the respiratory murmur is absent; but sometimes it is not replaced by any other murmur, whilst we sometimes hear the *bronchial respiration*, the characters of which we have already described, and the cause of which we explained when speaking of pneumonia. We then said that it might manifest itself every time the air could not reach beyond the bronchi: in the case of pneumonia, hepatisation of the pulmonary tissue prevents the introduction of air into the vesicles; in the case of pleuritic effusion the mechanical condensation of the pulmonary tissue produces the same effect. Observation also shows that the first of these causes produces bronchial respiration more frequently than the second. One may satisfy himself of it by running through the particular cases of pneumonia and pleurisy.

When the bronchi are full of mucus, the interposition of a liquid between the lungs and the ribs does not prevent the different râles from being heard to which the accumulation of this mucus may give rise. This remark is not devoid of importance, for the existence of these râles may incline one to think that the lung is in immediate contact with the ribs, and consequently may occasion the disease to be mistaken.

When we make a healthy person speak, whilst the ear is applied over the chest, we sometimes hear over all the points a greater or less resonance which presents itself, according to the individual, with a thousand modifications of tone and intensity; sometimes this resonance is altogether absent. If we apply the ear over the chest of a patient whose pleura is the seat of an effusion, it often happens that on the side where this effusion exists the resonance of the voice is quite different from what it is on the opposite side. In several cases it approaches somewhat to the timbre of the goat's voice; thence the term *ægophony*, as Laennec has designated this modification of the voice. But we deem it important to remark that this word *ægophony* is but a generic term under which must be comprised numerous modifications which no longer resemble the tremulous voice. Thus, for instance, Laennec has himself remarked that oftentimes it is no longer a tremor that is heard, but a noise altogether similar to the voice of the *Punchinello*. At other times it would appear that the voice passes through a trumpet; or else it is as it were smothered, and the articulation of each word is accompanied with a sort of peculiar souffle. In others there is merely a stronger resonance of the voice on the side where the effusion exists. Oftentimes the different shades of ægophony exist only at intervals, and are not marked except in the pronunciation of certain words. We have seen a patient, for instance, in whom the tremor of the voice existed only, but in a very marked manner, when he pronounced the word *oui*.

It may be readily perceived that, from these numerous varieties in the resonance of the voice, frequent illusions might result, and that it would even be possible that a phenomenon of the healthy state might be considered as a pathological effect. But there is a sure way to avoid error, and that is never to state whether there is or is not ægophony, before also hearing the voice on the side presumed to be healthy. Often, after having thought that there was ægophony where the other signs announced an effusion, the error was not discovered till the ear was applied to the opposite side.

The voice presents no modification as long as the effusion is inconsiderable; the different varieties of ægophony appear when the effusion becomes more copious; if it still increase, the peculiar resonance of the voice again disappears. However, this rule is not as constant as it is stated to be. We have very distinctly heard the voice resound quite differently from what it did on the healthy side, in a case where an enormous effusion existed in the pleura; the *bronchial respiration* was heard at the same time to a very great degree. In these two cases the cause of the resonance of the voice is probably not the same. When the effusion is inconsiderable, the sound of the voice is modified by the mere fact of its transmission through a liquid, then the lung is but slightly compressed; but if, in consequence of the increase of the effusion, this compression becomes extreme, if the air can no longer penetrate beyond the large bronchi, it vibrates in these after a particular manner, which gives rise on the one hand to the *bronchial respiration* and on the other hand to a peculiar resonance of the voice, which approaches more or less to a real tremor. The nature of the body interposed between the lung and the ribs, appears no longer to have any share in the production of these phenomena; this is so true that they are found to be absolutely identical in cases where the pleura is not the seat of any effusion. We have seen, accordingly, that when a lung is hepatised we hear simultaneously with bronchial respiration a peculiar resonance of the voice, which sometimes resembles that which exists when there is dilatation of the bronchi, sometimes simulates pectoriloquy more or less perfectly, and sometimes approximates the tremor which constitutes real ægophony.

We think we may conclude from the preceding considerations, that the difference which exists between the resonance of the voice produced by an effusion into the pleura, and the resonance of the voice heard in the case of pulmonary hepatisation, is not sufficiently marked in all cases to warrant us in considering ægophony as the certain pathognomonic sign of a pleuritic effusion. However, a distinction should be laid down here. If, at the same time that the sound is a little dull, and that there is ægophony, we hear the natural respiratory murmur without the mixture of any crepitous râle, but only weaker than on the opposite side, we may be certain that there is effusion, and not pneumonia; if, on the contrary, with a sound very dull, and a resonance of the voice which approaches more or less closely to tremor, no respiratory murmur is heard, or if this has been replaced by the sound of the bronchial respiration, it appears to us impossible to decide, from these signs alone, whether there is effusion into the pleura, or inflammation of the pulmonary parenchyma. In this case the absence of all sanguineous expectoration is a very strong presumption in favour of the existence of an effusion; we become certain of it, if it be observed that the affected side is more dilated than the other*.

157. Inflammation of the pleura is accompanied by a more or less marked disturbance of the different functions. Thus in the most ordinary cases the circulation is hurried, the heat of skin is increased; in a word, there is fever. In the acute form, the pulse is remarkably hard; it contrasts with the soft pulse of pneumonia, with the small and contracted pulse of inflammation of the abdominal serous membrane.

As long as the pleuritic inflammation continues unabated, the fever also continues; when it is lessened, or has passed into the chronic form, the skin loses its heat, but the pulse retains an habitual frequency which every evening becomes increased ; every evening, also, the temperature of the skin is raised. There does not seem to be any profuse perspiration, except in the case where tubercles are developed in the pleura or in the false membranes lining it.

---

* To the physical signs now mentioned may be added the following, which appear to me of great value, the perfect accuracy of which I have verified with M. Reynaud, who first pointed them out. We shall give them in that gentleman's own words.

"The more or less complete absence of the vibrations of the thoracic parietes, perceived by the hand when applied to them, whilst the patient is speaking, is a certain sign, when it exists but on one side, that a greater or less pleuritic effusion exists on this same side. This mode of examination does not require either that the patient should sit up, or that he should be stripped. By attending to the difference existing in this respect on the two sides of the chest, we may ascertain the quantity of the effused liquid; this examination, made at different heights in the affected side, often enables us to ascertain the height which it has attained, and to determine its level. In cases where pneumonia shall coincide with the pleuritic effusion, and then very often the symptoms belonging to inflammation of the parenchyma of the organ are entirely wanting, we shall see one of its signs to appear (the crepitous rale) by making the patient lie on the belly. In this case, also, we shall find ægophony to become bronchophony. The patient lying in this same position, whether pneumonia exist or not, the effusion will be discovered by the following signs; a very marked sound, similar to that of two bodies rubbing one against the other, a little jerky (*saccadé*), taking place alternately from above downwards, and from below upwards, in the movements of expiration and inspiration, and more or less marked, more or less rapid, according to the extent and rapidity of these same movements, will be very perceptible to the ear, whether naked, or armed with the stethoscope applied over the affected side. Several anatomical circumstances, easily appreciated, may prevent this phenomenon from always taking place."

Lastly, in a still more chronic form of the disease, the pulse itself loses its frequency, and all febrile disturbance disappears. This complete apyrexia coincides uniformly with free respiration. In this state the patient is far from being cured ; for auscultation and percussion still point out the existence of greater or less effusion : but the patient is placed in conditions most favourable for the absorption of the effusion. This is one of those facts which demonstrate how erroneous the opinion of the ancients was, who thought that fever was necessary for the resolution of most chronic diseases. Observation proves on the contrary, that a chronic inflammation can scarcely terminate favourably, unless the fever has first ceased. Thus, also, when accidental tissues (tubercles, scirrhus, etc.) are developed in any organ, they in general produce no disturbance as long as fever keeps aloof. The latter, far from favouring their resolution, as was admitted by the ancients, is the sign of their softening, and it is from the appearance of febrile disturbance that we are to date the supervention of serious symptoms.

The blood taken from the vein has almost always presented a dense coagulum, covered with a thick buffy coat. The cases where this latter appearance is wanting are so few in number, that we think they should be considered as exceptions to a very general rule. The almost constant existence of buffy blood in persons labouring under pleuritis is besides a phenomenon which for a long time back has engaged the attention of observers.

The digestive functions present no perceptible disturbance except in the case of complication.

It has been observed how often the serous infiltration of the extremities in the same side as the effusion coincides with this effusion. We have observed this coincidence but once.

The urinary secretion is diminished, disturbed, and perverted as in all cases of inflammation.

Lastly, nutrition properly so called usually presents considerable alteration, the result of which is marasmus, when there is chronic pleurisy with effusion. The emaciation is particularly marked, when there exist fever and dyspnœa ; on the contrary, when the breathing is not much embarrassed, and there is no fever, a considerable effusion into the pleura may exist for a very long time without nutrition appearing to be altered in any way.

158. Let us now recapitulate the different symptoms which we have passed in review, and present them in their usual order.

The invasion of pleuritis is marked by a pain most frequently seated below one of the breasts, preceded or accompanied by shivering ; at the same time there is observed a dry cough, some dyspnœa, some fever, and often greater weakness of the respiratory murmur on the side where the pain exists. If no effusion takes place, these symptoms usually disappear after the lapse of some days, and the patient is restored to health.

If the pleura becomes the seat of an effusion, new symptoms appear : on the side where the effusion is, the sound is dull ; the respiratory murmur is at first weak, then altogether gone, or succeeded by bronchial respiration ; the voice presents the different varieties of resonance already mentioned, the thoracic parietes on the affected side undergo more or less marked dilatation.

This series of phenomena may terminate fatally in a very short time ; such a termination should be apprehended, if the breathing be very much impeded, and the fever very intense. If, on the contrary, the dyspnœa diminishes, and also the febrile disturbance, the disease is prolonged ; it passes into the chronic state, and then may terminate either in death or in recovery.

Death most frequently supervenes in this case, in the midst of a state of marasmus, which seems to result both from the insufficiency of the hematosis, occasioned by the complete inertia of one of the lungs, and from the existence of a chronic inflammation, with copious suppuration and frequent production of accidental tissues. At other times death is owing to the sudden exasperation of the pleuritis, which having existed with impunity for several months in the chronic form, becomes rapidly fatal, as soon as it repasses into the acute form under the influence of a more or less appreciable cause. Finally, the fatal termination has been more than once by a communication suddenly established between the cavity of the pleura and the exterior, either through the thoracic parietes, or through the bronchi.

A favourable termination is announced by the cessation of fever, the diminution of the dyspnœa, the good state of nutrition and of the patient's strength. When this combination of circumstances exists, the absorption of the effusion usually takes place in a longer or shorter space of time ; and if the lung can no longer be dilated sufficiently to be brought in contact with the ribs, the latter are depressed more or less perceptibly, as has been already stated. Sometimes also a rapid recovery takes place, after the effusion has made its exit through the bronchi or thoracic parietes.

Critical phenomena often manifest themselves at the same time that the pleuritis is being resolved. We have seen instances of this in several of the cases cited above.

159. We should have presented but a very imperfect picture of pleurisy, if we did not state that the symptoms which announce it are far from always existing such as they have been now described by us. Thus there are pleurisies with or without effusion, which are accompanied neither by pain, nor cough, nor dyspnœa, nor acceleration of the pulse. There are others where, by reason of the seat of the inflammation, we observe neither dulness of sound, nor any modification of the respiratory murmur, nor of the voice. It will suffice here to retrace those remarkable anomalies on which we have dwelt, whether in the particular cases or in the special examination which we have made of the several symptoms of pleurisy.

We shall also only retrace the principal varieties of pleurisy, having already pointed out the symptoms of each. Thus we should particularly distinguish pleuritis with or without effusion, manifest or latent, double or single, general or partial ; among partial pleurisies, we should particularly note interlobular, diaphragmatic and median pleurisy. Three other varieties may again be laid down according to the nature of the effusion, according as this liquid consists of pus, of serum more or less limpid, or of blood.

160. Among the diseases which most frequently complicate pleurisy, some are seated in the chest, and others outside this cavity. Among the former may be enumerated pneumonia, pericarditis, and lastly pneumo-thorax. We have seen that the latter is but very seldom the result of a gaseous exhalation of the pleura ; most ordinarily it appears in consequence of a communication accidentally established between the cavity of the pleura and the air-passages. When there is much gas and but little liquid, the sound is dull only inferiorly, whilst more superiorly the sonorousness of the chest is increased, at the same time that the respiratory murmur is gone. However, when the orifice of communication between the pleura and bronchi is very large, there is heard at each inspiration a sort of puff similar to that produced by the entrance of the air into vast tuberculous excavations which are nearly empty. Under other circumstances we have heard real gurgling, at other times, in fine, the metallic tinkling so well described by Laennec. These different phenomena must necessarily vary, according to the size and form of the pulmonary fistula, the nature of the cavity in the lung, and the size of the bronchial tubes which open into it, and the relative quantity of gas and liquid contained in the pleura. The metallic tinkling does not seem to us to

be in this case a pathognomonic sign, for we have met it very marked in cases of simple tuberculous excavations. A much less equivocal sign seems to us to be the succussion of the thorax, as practised by Hippocrates. By it we very distinctly hear a fluctuation of liquid within the chest, which can only exist when the pleura contains gas and liquid at the same time.

161. The prognosis of pleurisy varies according to a great number of circumstances. It is unnecessary to say that pleurisy without effusion is in general much less dangerous than pleurisy with effusion. Dry pleuritis, confined to a small extent, is often a very slight disease, which does not impede the respiration and which excites no sympathetic disturbance. If, on the contrary, it is general, if it exist at the same time on both sides, it may prove rapidly fatal before any effusion has taken place.

The seat of the pleuritis also influences the nature of the prognosis. Thus, observation has taught us that diaphragmatic pleuritis is in general accompanied with more serious symptoms than a more extensive inflammation of other portions of the pleura.

When there is effusion, the unfavourableness of the prognosis is directly proportional to the quantity of the effusion. A double accumulation, even though small, is an almost always fatal case. There have been, however, instances of recovery. In the same manner as, according to the predisposition of the individual, inflammation of the pulmonary parenchyma is sometimes more dangerous than a much more extensive inflammation, in a similar manner a slight effusion often occasions death, whilst other patients do not die of a much more considerable effusion.

It is probable that a purulent collection is more dangerous than a serous collection. Nothing proves that the effusion of blood is accompanied by more serious symptoms than other effusions.

The dyspnœa, and the continuance of fever, are always unfavourable omens. We can scarcely hope for the absorption of the fluid, except when the fever is very moderate, or altogether absent, and the dyspnœa slight.

If, notwithstanding the small extent of the effusion, the patient continues to waste away, and profuse sweats come on, we have reason to apprehend the development of tubercles in the inflamed pleura.

162. The treatment of pleurisy rests on the same basis as that of pneumonia; thus, as we have already dwelt at some length on the latter, we shall say but little here for fear of falling into needless repetition.

Blood-letting must be employed to great extent from the very onset of the disease. When the pain appears, and there is as yet no effusion, leeches applied over the painful side often remove the disease. This effect is obtained with more certainty if general blood-letting be premised. The combination of both kinds of blood-letting is very useful.

When the effusion does exist, we must still have recourse to extensive blood-letting, for the double purpose of preventing the farther progress of the inflammation, and of diminishing the quantity of blood which, in a given time, should traverse the compressed lung. As long as there is great dyspnœa, high fever, and the strength tolerable, we should not dread to follow up blood-letting. We should again have recourse to it if, after the inflammation has passed into the chronic state, it is again augmented.

At the same time that large blood-letting is employed, we must not neglect to keep large emollient cataplasms continually applied to the affected side. This mode of treatment may be particularly effectual in persons in whom the muscles of the thoracic parietes are not thick.

As long as the fever is high, we should not have recourse to revulsives except with great precaution; but when it is lowered, and no signs of violent reaction are observed, a large blister should be applied to the affected side. In irritable persons the blister sometimes recals the fever; we must then diminish its surface without entirely drying it. If, after the lapse of a certain time, the effusion is not diminished, we can try to change the mode of irritating the skin. We shall dry the blister on the chest, and apply others to the lower extremities. The blister to the chest should be replaced either by a seton, the suppuration of which should be kept up for a long time, or by a moxa.

A period comes when there no longer really exists any inflammation, and when the effusion is no longer injurious except as a foreign body which compresses the lung. It is then a matter of doubt whether the revulsive means now mentioned can still be of any use. At this period different diuretic and diaphoretic means may be employed with advantage, provided, however, that their action be duly regulated, and that these remedies do not become stimulants, which being carried into the torrent of the circulation, may awaken the inflammation of the pleura. But what should be particularly recommended at this period, and a thing which must very much promote a cure, is strict observance of regimen. By following these directions attentively, we gradually bring back the pleura to its natural state, and place it in the most favourable condition to bring about the absorption of the effusion.

When, in spite of all the means employed, the effusion continues, must we have recourse to the operation for empyema? This operation has been hitherto employed principally in the case where the effusion was the result of a penetrating wound of the chest; it has particularly succeeded when this effusion was formed by blood. Inflammation is then either gone or very secondary, and no obstacle prevents the lung from dilating and resuming its ordinary volume as soon as the liquid accidentally effused has been evacuated. The circumstances are far from being the same in the case where the effusion is the result of a genuine inflammation of the pleura. Two cases may then present themselves : in the first case the operation is performed when the inflammation still continues, and it is then useless ; for we do not destroy the cause, and the liquid is scarcely discharged when it must be again reproduced. In the second case the operation is attempted when there is no longer, properly speaking, any inflammation, and when the liquid collected in the cavity of the pleura is no longer anything but a foreign body, whose presence alone is an obstacle to the cure. But here new circumstances may prevent the success of the operation. Dense and solid false membranes often cover the lung, keep it firmly applied to the lateral parts of the vertebral column, and, like a sort of barrier, do not allow it to approximate the ribs. The operation for empyema may also, in irritable subjects, rekindle an inflammation not perfectly extinguished, in the same manner as in dropsical patients the operation of paracentesis has more than once produced peritonitis.

Finally, the difficulty of distinguishing with certainty, in all cases, whether there be pleuritic effusion or pulmonary hepatisation, is one of the causes which must prevent the frequent employment of the operation for empyema. Shades so delicate, and oftentimes so lightly marked, separate ægophony, the sign of an effusion, from the particular resonance of the voice, the sign of pulmonary hepatisation, that, in our opinion, it would not be prudent to decide on having recourse to the operation for empyema, for the sole reason that the existence of ægophony has been ascertained. We think this operation should not be attempted unless when, besides the ordinary signs of effusion, there is undoubted dilatation of the chest, and manifest fluctuation through the intercostal spaces which project outwards beyond the level of the ribs.

BIBLIOTH.
COLL. REG.
MED. EDIN.

DIVISION IV.

DISEASES OF THE ABDOMEN.

FIRST BOOK.

DISEASES OF THE DIGESTIVE TUBE.

THE changes found after death in the digestive tube are connected with two great series of changes of functions. In one of these series, the functional disturbances are principally directed towards the digestive passages; there the symptoms are, there also the entire disease evidently is. In the other series, the case is no longer the same: the predominant functional disturbances no longer have their site in the digestive apparatus, though in this apparatus the anatomical lesion still resides; and whilst, with respect to the stomach and the intestines, the symptoms observed are but slightly marked, other organs, and principally those of circulation and innervation, present disturbances as serious as they are varied, in the several acts which they are commissioned to perform. In such a case we cannot be led by the mere symptoms to seek in the digestive passages for an alteration to explain them. Thus, for a very considerable time the existence of this alteration was not even doubted; and when it was discovered, many persons still hesitated to admit that it alone was the cause of all the symptoms, and that it alone constituted the entire disease; so little proportion did there appear to them to be between its intensity and the severity and universality of the functional disturbances. They then gave to these diseases the name of essential *fevers.* To discuss and solve, as far as is possible by the help of facts, the important questions which the study of these diseases has recently raised, such is the object which is to occupy us in the following section. We shall then have to direct our attention to diseases of the first series, or those which recognise the morbid state of the digestive apparatus for their sole commencement and only element. The state of these diseases, or at least of some of them, will be the object of a second section.

SECTION I.

OBSERVATIONS ON FEVERS.

THE diseases traced in the observations included in this section are those which were for a long time described by the name of essential fevers, and which are designated in the Nosographie of Pinel by the terms inflammatory, bilious, mucous, adynamic, and ataxic fevers. It was reserved for M. Broussais to change the face of science on this point, as well as on many others.

Since the publication of the Examen of Medical Doctrines, numerous works have appeared in support of the doctrine of the localisation of fevers. These works, which are all indebted for their appearance to those of M. Broussais, have still further proved the important part which inflammations of the digestive tube perform in the production of what are called essential fevers. But they have at the same time put some restrictions on the opinions expressed by M. Broussais, regarding the seat and nature of these fevers. Thus the valuable researches of M. Bretonneau have pointed out, under the name of *dothinenterite*, a particular lesion of the intestinal follicles which coincides more frequently than simple gastro-enteritis with the phenomena of what are called essential fevers. It is this same lesion, which, pointed out before M. Bretonneau's time by MM. Petit and Serres as the anatomical character of their entero-mesenteric fever, had been described by us in the first edition of the Clinique under the name of *intestinal exantheme*. We had pointed out all the stages through which the patches (plaques) and isolated papulæ (boutons) pass, from their origin to their transformation into ulcers. M. Bretonneau has added nothing either to M. Petit's description, or to ours; he has merely assigned a seat to the exantheme, by placing it in the follicles. More recently, M. Louis has, by his excellent remarks, put out of all doubt the importance of the exanthematous lesion of the intestinal follicles in the production of severe fevers.

However, admitting that simple or follicular enteritis is the commencement of a great number of fevers, can every thing be explained by them? We never thought so; and it has always appeared to us that these fevers never become severe except in consequence of a disturbance which supervenes in the innervation and hematosis. This has also been very satisfactorily proved by M. Professor Bouillaud, who has contributed to give considerable weight to the doctrine of the localisation of fevers, by placing this doctrine on a broader basis, more particularly by establishing the reality of the alterations which on the one hand the blood, and on the other hand the nervous centres undergo in a great number of fevers. The part performed by these has also been clearly demonstrated by the valuable observations of M. Chaufford of Avignon.

This disturbance of hematosis and innervation which gives rise to the phenomena called adynamic and ataxic, or in other words, to the typhoid state, may be the result of several lesions, different in their nature and in their seat.

First, gastro-intestinal inflammations give rise to it much more frequently than diseases of any other organ. Of these inflammations some are directed principally to the intestinal follicles, which become tumefied, and ulcerate; others consist merely in a simple inflammation of the mucous membrane itself. Other organs also, however, though less frequently than the digestive tube, may become the occasion of that profound disturbance of innervation and hematosis, a disturbance which constitutes the adynamic and ataxic fever of Pinel. Thus phlebitis, pneumonia, particularly in aged persons, erysipelas, phlegmon, inflammations of the urinary passages, an abscess developed in the prostate, a matritis, several forms of inflammation of the liver, variola, acute inflammation of the synovial membranes, etc., may give rise to it. M. Boisseau has clearly proved this in his physiological pyretology, and it has been put out of all doubt by several other works, by those of Dance in particular.

But this is not all, and it may also happen that instead of having its commencement in a solid, the ataxo-adynamic fever recognises for its commencement some alteration of the blood, whether this alteration may have taken place spontaneously, and produce a sort of acute scorbutus, or it may follow the introduction of deleterious agents, as miasms, virus, matters in a state of putrefaction; these agents, after having modified the composition of the blood, come to poison the venous centres. Then the disease is everywhere where blood and nerves are to be found, and in every part lesions may occur, which perform but a secondary part in the production of the symptoms.

Thus the ataxo-adynamic or typhoid state may be developed in consequence of a great number of affections widely differing from each other: it is a collection of symptoms, identical as to their ultimate seat, but not as to their origin. Thus symptoms, identical also as to their nature, differ only in their greater or less intensity; with regard to their progress and duration, they are subordinate to the progress and duration of the affection in consequence of which the typhoid symptoms have been developed. If it be a primary alteration of the blood which gives rise to them, these symptoms may acquire in some hours their highest degree of development, and in some hours even occasion death. If the commencement be in an organ where inflammation is rapidly developed, as in a lung or in a vein, the typhoid symptoms shall have a quick course and a rapid termination similar to this inflammation. If, on the contrary, they are connected with an inflammation, which, as that of the intestinal follicles, has stages which it passes through with a certain degree of slowness, they will be, like the inflammation itself, slow in their development, and slow in their termination, whether favourably or fatally. This is, we think, all the difference between a typhoid fever which is connected with a phlebitis, for instance, and that which follows a dothinenterite. There will be, however, in each of them, some particular symptoms, which will depend on the local lesion, as the diarrhœa in the case of follicular enteritis. We may, no doubt, as M. Louis has done, reserve the term typhoid fever for the morbid state which proceeds along with the affection of Peyer's glands; this, however, is a distinction purely arbitrary; and besides, this mode of proceeding seems to us to be attended with the inconvenience of thus designating a great number of cases of follicular enteritis, in which the term typhoid affection has no longer any meaning; for all cases of follicular enteritis are certainly not accompanied either with stupor or the different phenomena of ataxic or adynamic fever; all do not resemble typhus; they are oftentimes mere inflammatory, bilious, or mucous fevers, to use for a moment the language of the Nosographie Philosophique.

We do not then think it right to retain the term typhoid fever, because this term leaves a vagueness in the mind, which is not in science, and because it often fails in exactness with respect to the symptoms which it represents. We admit as a possible but never necessary consequence a *typhoid state* in a great number of diseases, that is to say, a state in which there appear some general symptoms more or less similar to those which characterise typhus. This state indicates that the disease no longer entirely exists in the organ where it had commenced; it is in some degree the signal that the blood and nervous centres participate in the disease. Thenceforward the nature of this disease is no longer the same, and other therapeutic indications present themselves to be fulfilled.

We hope that the observations which are now about to be made will contribute to throw some light on the questions just started.

CHAPTER I.

CONTINUED FEVERS TERMINATING IN DEATH.

In classing the cases relating to those diseases according to the seat of the lesions which they leave after them, we are led to distribute them, according to our observation, into three principal articles.

In the first are arranged the cases, where we ascertained in the digestive tube the existence of the lesion described by us in the former edition of this work under the name of intestinal exantheme, and by M. Bretonneau under the name of dothinenterite. These cases are the most numerous. They constitute the typhoid fever of M. Louis. The disease with which they are connected seems to us more suitably designated by the terms exanthematous or follicular enterite, or even by that of dothinenterite. Should there be any repugnance to the admission of these terms, as appearing to prejudge a question which is in dispute, we would still prefer to the term typhoid fever, that of entero-mesenteric fever, which had been employed by MM. Petit and Serres. At the same time that it does not place the intestinal lesion in the first rank, it has at least the advantage of marking it; it attaches the mind to something precise, by referring it to the anatomical character of the disease.

Under the second article we give the cases, fewer in number, in which the digestive tube no longer presented to us an affection of its follicles, but a simple inflammation of its mucous membrane, characterised by the redness and softening of this membrane. This is the gastro-enterite, first described by M. Broussais. We shall prove that it may, as well as the follicular enteritis, give rise to typhoid symptoms, but in a smaller number of cases. The febrile disturbance which it excites, has also in general a shorter duration and less determinate periods than that to which follicular enteritis gives rise; perhaps, also, we may master it more easily and arrest it with more certainty in its progress than the fever connected with a dothinentery.

Lastly, in a third article, we shall detail the cases in whilst which, ataxo-adynamic or typhoid symptoms were still observed, we no longer discovered any lesion in the digestive tube. But, elsewhere, in different organs, alterations are found which may be regarded as the origin of these symptoms. But these alterations do not, any more than those of the digestive tube, constitute the entire disease; they are in some degree but the occasion of its development, nearly as a wound which, in certain predispositions of the system, becomes an occasional cause of tetanus. Here, as in cases of simple or follicular enteritis, it is in the nervous centres secondarily affected, that we must seek the cause of the severity of the disease; it is in the nature of the modifications which the nervous centres have undergone, that we must seek the explanation of the symptoms; it is to the state of those centres that the treatment must in a great measure be made subordinate.

ARTICLE I.

CONTINUED FEVERS, CONNECTED WITH FOLLICULAR INFLAMMATION OF THE INTESTINES.

In the following cases we shall endeavour to trace the follicular enteritis through its different stages, from that where it constitutes only some elevations scattered over the inner surface of the small intestines, to that where the ulcerations which have succeeded those elevations are themselves cicatrised. We shall study what are the symptoms which have accompanied the different phases of this kind of exantheme; we shall strive to determine their relations to the latter; and, finally, we shall see how far the disease, in its different symptomatic forms, is influenced either favourably, or unfavourably, by the different therapeutic methods.

SECTION I.

CASES OF FOLLICULAR ENTERITIS AT THE PERIOD OF THE EXANTHEME.

Case 1.—*Symptoms of bilious fever; no diarrhœa—Death from pneumonia nine days after the termination of the primary disease—Tumefaction of the follicles of the small intestine.*

A man, twenty-seven years of age, residing in Paris for the last thirteen months, experienced for some time back a loss of appetite, some headach, a sensation of unusual debility. One evening, after supper, he had a shivering; all that night he felt a burning heat. On the next day this heat continued; he had a slight pain in the throat, and vomited the food which he took the day before. The evening after that he entered the Charité. Examined the next day, the third day of his illness, he presented the following state:—Countenance yellow, with redness of the cheeks; supra-orbital headach; eyes injected; general debility; motion painful; pains in the joints. Lips dry; tongue covered with a thick yellow coat, of a bright red at the edges and apex; bitter taste in the mouth, not much thirst; deglutition slightly painful; abdomen soft, and free from pain in every part; no stools since the commencement of the disease. A little cough; mucous râle in some points. Pulse frequent and hard; skin dry, and of an acrid heat. (Venesection to twelve ounces; ptisan of barley, lavement, diet.)

On the following day, the fourth day, state of patient not changed. (A second venesection.) Delirium in the night of the fourth day.

On the fifth and sixth days, the yellow tint of the face becomes more and more marked; features sunk; the patient looks with an air of amazement at those around him; his answers are slow; coating of the tongue very thick; abdomen not tense; constipation still continues. On the morning of the sixth day, we were struck with the way in which the respiration was performed; it was high and accelerated: on examining the chest, we discover a well-marked crepitous râle all over the lower lobe of the left lung; in this same extent there was a slight diminution of sonorousness of the thoracic parietes; no expectoration; pulse extremely frequent. Existence of pneumonia evident. (Venesection to twelve ounces, sinapisms to the lower extremities.) Neither the blood drawn on this nor on the preceding occasion was buffed. In the night, the patient became delirious.

On the morning of the seventh day, dyspnœa very great; expectoration not more than on the preceding day. On the posterior and lateral part of the chest on the left side the sound was dull, and neither crepitous râle nor respiratory murmur was heard there. The state of the digestive passages was the same. Answers were obtained with difficulty from the patient. (Two blisters to the legs.) Delirium in the night.

On the eighth day the same state. On the ninth extreme dyspnœa; the patient can with difficulty pronounce some words in broken accents. He died in the course of the day.

Post mortem. The brain and its appendages considerably injected, a circumstance which seems connected with the state of asphyxia in which the patient died.

The lower lobe of the left lung was completely hepatised; the remainder of the pulmonary parenchyma, on the left and right sides, very much engorged. The heart contained, on the right side, a large black clot of but little consistence.

The inner surface of the stomach presented nothing but a certain number of submucous veins gorged with blood, which were particularly apparent towards the great cul de sac. The mucous membrane itself was every where pale, and of the ordinary consistence.

This same venous injection in the three lower fifths of the small intestine. At the extent of two feet above the ileo-cæcal valve, there existed five large patches of a reddish grey colour, of an oval form, occupying the free edge of the intestine, forming a slight prominence above the level of the rest of the mucous membrane. These patches evidently resulted from hyperemic tumefaction of the follicles of the intestine; between these patches some small pustules were found, some red, others of a whitish grey colour, which are nothing but isolated follicles. Between these pustules, or between the patches, the mucous membrane was pale. The inner surface of the large intestine was white through its entire extent.

This case furnishes a well-marked instance of dothin-enterite in its first stage. At the time the patient entered the hospital, the respiratory apparatus presented nothing but slight irritation of the bronchi, and it was not there we were to seek the cause of the fever. Was there any other organ in a state of suffering? In no part, except at the pharynx, was there any pain discovered; the abdomen retained its natural softness, and freedom from pain. There was no diarrhœa, but there was merely observed a *saburral* state of the tongue, with redness of its periphery, which coincided with a *bilious tint* of the face. Add to this the state of the skin, and of the pulse, and we shall have the disease described by nosographers under the title of *bilious fever.* Still what information did we obtain from the post mortem? It revealed to us a morbid state of the intestinal follicles; and as this same state has been found in cases where, a long time before death, the same symptoms had been observed during life, we are warranted in supposing that there is a remarkable connexion between these symptoms and the intestinal disease; we may say that it is the latter which was at least the commencement of the former. This disease is still in its first stage; it as yet consists but in a species of exantheme. Now one may be asked at what precise period did the exantheme commence; was it only the day the shivering manifested itself, and from whence we dated the commencement of the disease? But then we shall ask, what was the lesion which, previous to this day, had produced anorexia, headach, and general illness? If the intestinal lesion commenced simultaneously with the first derangement of health, was it by becoming all at once more intense, or by changing its nature, that it produced the fever?

Be that as it may, we should remember from this case that a dothin-enterite may develope itself without producing either pain, tension of the abdomen, or diarrhœa. Neither should we forget the state of the tongue, which was not explained in this case by any morbid state of the stomach. In this latter organ there was not more saburra than irritation, and its examination after death would no more have justified the administration of an emetic than the application of leeches to the epigastrium.

If we now study this disease with respect to its progress, and with respect to the therapeutic means opposed to it, we shall find that here, as in many other cases, blood-letting exercised no beneficial influence: every day, in spite of it, we perceived the disease to become worse; the delirium, which returned every night, the appearance of the countenance, the disturbance of the intellect and of speech, the continually increasing difficulty of moving were such as should cause one to dread the transformation of the disease into *adynamic fever*, properly so called, when the pneumonia which prematurely terminated the patient's life, declared itself. This pneumonia was remarkable for the rapidity with which it passed from the first to the second stage; no pleuritic pain accompanied it; no characteristic expectoration marked its existence. Here is a case, among a thousand others, in which the previous blood letting did not prevent a new inflammation from setting in.

Case 2.—*Symptoms of ataxic fever—Death six days after the invasion—Tumefaction of the intestinal follicles—No appreciable lesion in the nervous centres.*

A servant, thirty-one years of age, entered the hospital in a state of complete delirium. Those who brought him stated that four days previously he had been seized with headach and fever. Only on the day before his admission, he commenced to rave. When we saw him, his face was very much flushed; the eyes rolled continually in the orbits, as if agitated with convulsive movements. The patient uttered some words unconnectedly, and no answer could be obtained from him; the strait-waistcoat had to be put on him. The trunk was in constant motion; tongue red and dry; profuse salivation set in; abdomen soft; no diarrhœa. The pulse more than 120; still retained considerable strength. (Venesection to twelve ounces; thirty leeches to the neck).

On the two days following, the delirium continued without any lucid interval: the tongue became more and more dry; face pale; pulse extremely frequent, and thready, and the patient died towards the end of the sixth day. The constipation did not cease; the abdomen became a little tympanitic on the second day.—Thirty more leeches were applied to the neck on the fifth day, and on the sixth two blisters were applied to the legs which did not take.

Post mortem. Meninges pale; no encephalic injection. Thoracic organs healthy. Two red patches, each the size of a two franc piece, were observed towards the great cul de sac of the stomach. These patches consisted of a dotted injection of the mucous membrane; in every other part this membrane was of a good consistency.

Small intestine white, without any appreciable lesion, in its upper five-sixths. The lower fifth presented, 1st, some oval red patches, evidently consisting of diseased follicles; 2ndly, a great number of small conical pustules, equally red, which seemed to us nothing but isolated follicles. Between them the mucous membrane was white, and of a good consistence. A few similar pustules existed in the cæcum. The rest of the large intestine was pale, its mucous membrane not softened.

The alterations of the digestive tube, found in the body of this patient, are the same as those which we saw in the preceding case. Here there were but the two small red spots of the stomach. Yet what a difference in the symptoms! The subject of this case appeared one who should have presented after death lesions connected with the brain, and none were discovered. The encephalon and its appendages were even found paler than in the subject of the first case, where delirium existed only at intervals. In other respects there was in both the same absence of local symptoms with respect to the abdomen; the tongue, however, in both cases lost its natural appearance. But it was in the second that it was modified in the most serious manner. Is it the two small red spots found in the stomach that shall explain in this case the redness and dryness of the tongue? But in how many persons do we not find more intense and more extensive injection in the mucous membrane of the stomach, without the tongue having been altered during life!

Here then are two individuals in whom one and the same lesion of the intestine is not revealed by any other local symptom than by a modification of the state of the tongue, which in both is not the same; still further, this intestinal lesion, identical in both, is accompanied in both by general symptoms of a very different description.

Again, the intestine examined here on the sixth day, presented the same alteration as in the preceding case, where it was only on the ninth day it was examined.

Here again, as in the first case, we can perceive the total inefficacy of blood-letting, both general and local. By this I do not mean to say that we must not have recourse to it; I only say that by it we do not always master the disease, nor do we always arrest it in its progress. These cases, moreover, are not the only ones of this kind which I might adduce. Out of the hospitals I might cite several instances of young medical students, who, being bled very largely from the very commencement, and during the course of diseases similar in their nature to that just now cited, still were carried off. I shall here quote only the two following cases, as instances of the frequent inefficacy of blood-letting, whatever be the period of the disease at which it is employed.

A medical student, twenty-two years of age, who had been residing in Paris for about three months, in a spacious and airy bedchamber, had worked very assiduously, had lived very well, and had not committed any excess since his arrival in Paris. Toward the end of January, 1829, he was seized with a violent headach, which he tried to remove by a purgative. The headach, far from lessening after this, increased and continued for three days, without any other symptom: then some fever appeared, and, at the same time, the intellect became disturbed. *He was bled twice from the arm* without any amendment following. The intellects became even more and more disturbed; pulse very frequent. Thirty leeches were applied to the neck, and a considerable quantity of blood flowed from their bites. The day after their application the face was pale; features remarkably sunk; the delirium continued worse than ever; subsultus tendinum very frequent, and the tongue which, till then, was only white, was now dry. Ice was then applied to the head; all the symptoms became worse; continual tremor of the muscles, in which the tongue participated, when the patient attempted to protrude it from the mouth; pulse became thready, and the patient died.

In another medical student of the same age, and living about the same length of time in Paris, not addicted to any species of irregular conduct, the first derangement of health manifested itself, as in the preceding case, by an intense headach, which, after having continued for three days, was accompanied with fever. *A first bleeding*, employed on the same day that the fever appeared, was not followed by any improvement. The next day *a second bleeding;* headach still continued; pulse became more frequent, tongue white and moist. *Leeches were applied to the anus;* no amendment; *he was bled from the foot;* the headach continued as well as the fever. Recourse was then had to cold applications to the forehead. The temples were rubbed with ether; sinapisms were applied to the legs. The headach disappeared, and the patient appeared better. But the next day the frequency of the pulse again increased, and slight disturbance of the intellect was observed. On the following day, all the symptoms of violent fever declared themselves; repeated epistaxis, dryness and blackness of the tongue, leaden tint of the face; subsultus tendinum; irregularity of muscular action; tympanitic state of the abdomen, disturbance of the intelligence, at first intermittent, then continued. Pulse very frequent and small; death.

Here are two more well-marked cases, where blood-letting was equally ineffectual, either to remove the still slight symptoms which existed at the time it was employed, or to prevent the development of more alarming symptoms.

Case 3.—*Symptoms of ataxo-adynamic fever—Death on the eleventh day—Tumefaction of the follicles of the ileum and cæcum—Injection of the meninges and of the exterior grey substance of the cerebral hemispheres—Spleen large and soft.*

A peruke maker, eighteen years of age, exhausted by excess in venery and that of the table, felt, on the 3rd September, towards two o'clock in the afternoon, and without any known cause, a violent shivering, which lasted for three hours; this was succeeded by heat, then a profuse sweat set in, and continued till the following morning. The four following days, there was constant heat, perspiration at night, headach; mouth very foul, anorexia, diarrhœa. During all this time the patient kept his bed, and drank nothing but eau sucrée. He entered the Charité on the 7th of September; he walked to the hospital; in the course of that night he raved a little.

On the 8th headach less, countenance red, eyes brilliant; tongue dry, scarcely red; thirst, anorexia, mouth very foul; abdomen a little tympanitic, slightly painful on pressure; stools watery, preceded by colicky pains; pulse frequent, a little hard; skin hot.

On the night of the 8th, the patient again became delirious; on the morning of the 9th, the delirium continued: the eyes remained closed; face very red; the pulse, moderately frequent, had lost its hardness. (Bleeding to two palettes; sinapisms to the knees.)

On the 10th, some amendment; intellects clearer; but from time to time, however, his ideas again became disturbed; the tongue was always a little dry, the abdomen tympanitic; two liquid stools. (Twelve leeches to the anus, sinapisms to the legs in the evening.)

The delirium returned in the day; at night we were obliged to tie him, in order to prevent him from escaping from his bed.

On the 11th, he was sunk in a profound stupor, from which, however, it was not difficult to arouse him; he answered questions, but knew not where he was; he pronounced some unconnected words, and then his eyes closed again; the pulse, which was weak, had become very frequent; digestive functions in the same state. (Eight leeches to the anus; two blisters to the legs in the evening; barley water with gum.)

On the 12th, state of coma more marked; four involuntary stools. (Four leeches behind each ear; embrocations of camphorated oil of camomile to the abdomen; aromatic frictions to the extremities; two more blisters to the thighs.)

The leeches prescribed for the neck were applied to the anus; in the day the patient emerged from the state of coma; became very uneasy, wept, and cried aloud. (The same prescription, except the blisters.)

On the 13th, we scarcely approached his bed, when he began to cry, and appeared sunk in despair; he no longer returned any answers; however, he still retained sufficient intelligence to show his tongue when signs were made to him to do so. The tongue was dry, a little brown at its centre; he had had no stool. (Mineral lemonade.)

On the 14th, profound coma; conjunctiva injected; face covered with a cold clammy sweat; extremities icy cold; pulse thready, and so frequent that it could not be counted; death two hours after the visit (from the 10th to the 11th day of the disease).

Post mortem twenty-two hours after death. *Cranium.*—The arachnoid of the convexity of the hemispheres considerably injected. It was torn with the greatest ease; on endeavouring to raise it, we detached with it some superficial portions of the cerebral convolutions. The surface also of the hemispheres presented a slight rosy tint. The ventricles contained but a very small quantity of serum. Arachnoid of the base not injected.

Thorax.—Both lungs engorged with a great quantity of bloody serum. The heart contained some black blood half clotted.

Abdomen.—The inner surface of the stomach was pale through all its extent. The duodenum was white, as also the jejunum in its upper three-fourths. The lower fourth presented several red patches, which, altogether, might fill up about from eight to ten inches in length. The whiteness re-appeared in the upper two-thirds of the ileum. In its lower third, numerous elevations were seen to arise from its inner surface, projecting one or two lines above the mucous membrane; their breadth varied from that of a grain of hemp-seed to that of a large lentil; the colour was a dull white. In the centre of three or four of them there was a slight loss of substance, hardly equalling the size of a pin's head. They were all seated in the mucous membrane. At first distinct, they became confluent near the ileo-cæcal valve ; where they were distinct, the mucous membrane placed in the intervals between them, retained its white colour ; lower down this membrane had acquired a rosy tint.

In the cæcum and in the transverse and ascending colons these elevations were again found, but much fewer in number. Scarcely four or five of them were counted in a space of six inches in length. However, the mucous membrane was more injected than that of the extremity of the small intestine.

The remainder of the colon and the rectum were white and healthy.

The spleen was extremely large ; its tissue was dense and black.

The biliary ducts and gall-bladder contained a liquid of a dirty grey colour entirely different from bile.

This disease again presents an aspect different from that of the preceding. Some well-marked symptoms of intestinal irritation marked its commencement : there was no longer here constipation as in the preceding cases ; diarrhœa existed from the very beginning ; it was ushered in by a shivering, and appeared simultaneously with the fever. The sweat which, at first, appeared every night, is a phenomenon of rather rare occurrence in cases of this kind. However, more alarming symptoms soon supervened. The intellects were at first disturbed at intervals, then the disturbance became continued ; remarkable alternations of extreme agitation and profound coma were observed ; the abdomen became tympanitic, and the tongue dry and brown. On opening the body the same exanthematous patches were found in the small intestine ; ulceration seemed to be commencing in some of them ; some of a considerable size were also found in the cæcum, and this latter circumstance explains the diarrhœa which existed at the onset of the disease. Still further, there was here in several points of the intestine a redness of the mucous membrane itself, which was wanting in the two preceding cases. Neither in this, more than in the preceding, was the state of the tongue explained by the state of the stomach. In this case, finally, we found in the brain traces of congestion which did not exist in the subject of the second case, though in the latter case the different nervous symptoms were still more marked.

Among the other alterations discovered on opening the body, we shall notice, 1st, the very peculiar appearance of the bile ; 2ndly, the great size and extreme softness of the spleen. We shall not find the same alteration of the bile in the following cases ; we shall find, on the contrary, a state of the spleen similar to that presented to us in the present case. Now, does not this extreme frequency of the same alteration in one and the same species of disease, prove its importance ? Should it not at least engage the attention of observers ?

The treatment was purely antiphlogistic ; during the first days diluent drinks and diet ; then large bleedings, general and local ; and lastly, revulsives. However, the disease continued its course. Would the blood-letting have been more successful, if employed from the very commencement ? We may suppose it, but who would venture positively to affirm it, after having read the cases preceding this case ? There were, besides, in this individual, peculiar conditions of innervation, which existed previous to his disease (his habits of excess), and which, no doubt, were not without their influence on its severity. However, we should not exaggerate this influence ; for no similar cause had existed in the individual who forms the subject of the second case, nor in the two medical students whose cases are mentioned among the observations appended to that case, and yet in those three individuals disturbances of innervation equally serious manifested themselves.

Case 4.—*Symptoms of fever at first mucous, then adynamic—Death on the 16th day—Tumefaction of the follicles—Numerous worms in the intestine.*

A boy, sixteen years of age, of delicate frame, as yet presenting no signs of puberty, had been living in Paris just nine days. He had come from Lorraine, and travelled in an open vehicle. Two days after his arrival he felt some headach and uneasiness in the throat. At the same time there was loss of appetite and fever; no pain in the abdomen nor diarrhœa. After having remained for seven days in this state, he entered the Charité, and then presented the following state:—

Headach; face pale; pupils very much dilated; great dejection of mind; listlessness in moving; tongue whitish; thirst; extreme disgust for food of every kind; frequent nausea; slight uneasiness in the throat; abdomen soft, and free from pain; no stool for the last six days; fever very slight; breathing free; chest sonorous; acute pain on pressure between the fourth and fifth ribs external to the breast, to the extent of one or two inches at most; can lie in any position. (Twenty leeches to the anus; tisane d'orge oximélée.)

The next day, 28th of February, mouth very foul; breath fetid; nausea; slight diarrhœa; abdomen swollen; pulse scarcely feverish; skin dry; countenance pale; eyes heavy; general debility sensibly increased. (Ten grains of ipecacuanha; two blisters to the legs; embrocations of camphorated oil of camomile to the abdomen.)

The patient vomited a little bile, and went to the night chair once in the twenty-four hours.

March 2nd, tongue equally loaded, mouth also foul; pain of side now but very slightly felt by strong pressure. But the patient was now despondent; he had had some delirium during the night; the prostration of strength increased; the features were perceptibly changed; the abdomen, now very large, was painful on pressure; pulse very frequent and compressible; skin dry and hot. (Six leeches behind each ear; embrocations with oil of sweet almonds over the abdomen; emollient fomentations; tisane d'orge edulcorée.)

A great quantity of blood flowed from the leech bites.

Only one stool took place up to the next morning.

On the 3rd day the patient commenced to become delirious; at night he was very much disturbed. On the morning of the 4th, the face was dejected and very pale, and expressive of anxiety; the patient answered questions with considerable difficulty; his ideas were lucid only at intervals; when the abdomen was even slightly pressed he uttered loud cries; the pain appeared then sufficiently acute to cause us to suspect peritonitis; tongue moist and yellowish; no evacuations by stool. (Flax-seed ptisan; emollient lavements and fomentations.)

Screaming and delirium on the night of the 4th. On the 5th the delirium continued; features changed; eye dull, half covered by the upper eye-lid. Pressure on the abdomen caused pain; pulse very frequent and weak, skin hot and dry; tongue still moist; ptient coughed very much.

On the 6th, in the same state; extreme dilatation of the pupils, which scarcely contracted under the influence of the light. On the 7th, face cadaverous; tongue for the first time dry and covered with a brownish coat; intellects quite gone; pulse thready, extremely frequent. Skin moist for the first time; abdomen soft, no stool; respiration hurried; cough; sibilous râle anteriorly on both sides. He died in the evening.

Post mortem. Nothing remarkable in the head.

Considerable engorgement of the posterior part of both lungs, particularly of the right; heart empty as well as the arteries.

Inner surface of the stomach generally white; slight injection of the mucous membrane over a small extent of the great cul de sac.

Considerable redness of duodenal mucous membrane; nothing remarkable in the upper three-fourths of the small intestine ; sixty ascarides in the lower fourth ; in this portion there were observed numerous elevations, irregularly rounded or oval, white, projecting one or two lines above the level of the mucous membrane, the diameter of which varied from that of a small pin's head to that of a two franc piece. They were formed by thickened mucous membrane, which was white around them ; some tricocephalous worms were found in great quantity in the large intestine, which was white ; some black points, crowded together, such as we have already described, studded the mucous membrane of the vermicular appendix of the cœcum.

When this patient entered the Charité, nothing was observed regarding him but general debility, a sort of languor of most of the functions. He presented in a manner that group of symptoms described under the name of mucous fever. The cause of this state was found to be the fatigue of a long and painful journey, and probably the use of bad diet. After some days, and whilst the general debility was proceeding, the pulse, scarcely frequent till then, became accelerated, delirium manifested itself, first at intervals, and then in a continued form, and the patient died in an ataxo-adynamic state. At first leeches were applied to the anus. Well-marked signs of gastric disturbance were combated by a vomit. Afterwards blisters were applied to the legs. An effort was made to stop the delirium by bleeding from the mastoid region and the neck. We have seen the lesions found on opening the body. Whilst the stomach presented but slight injection, and one of but small extent, the tongue was dry and black towards the termination.

Can the worms be considered as the cause of the disease of which the patient died ? We may observe that a similar state has been observed in persons whose intestines contained no worm. At other times, on the contrary, we have found the intestines filled with an immense quantity of lumbrici, in patients who presented none of the symptoms observed in this case.

Or is it to the presence of worms that we must attribute several of the symptoms, such as the extreme dilatation of the pupils, which continued from the time of the patient's admission to his death, the livid paleness of the face, and of the parts around the orbits, the fetid breath, enlargement of the abdomen, its extreme sensibility, particularly in the latter periods of life ? We have often seen this latter phenomenon appear in several cases of bad fever without the existence of any lesion to account for it. The patients evinced the most acute pain, uttered loud cries on making even slight pressure on the abdomen ; but if we made the same degree of pressure on other parts of the body, as the chest or extremities, they did not bear it better. This general feeling of pain is but the result of an exaltation of sensibility ; in other persons, on the contrary, also labouring under ataxic fever, the sensibility is so far abolished that one may pinch the skin with the utmost severity, and even run sharp bodies into it, without the patient appearing to feel any pain.

Is it again to the worms we are to attribute the pleuritic pain of which the patient complained at first, and the cough also which distressed him ? Morgagni, *irrefragabilis auctor*, as Haller calls him, has given the case of a young man, who, labouring under a cough and an acute pain in one of the sides of the chest, was freed from both after vomiting up a lumbricous worm. This fact should not be admitted except with some reserve. It is not a matter of doubt, however, that most of the symptoms of pulmonary phthisis may be simulated by the presence of tænia.

Besides, there are few diseases, particularly in children, of which persons have not imagined that they may consider worms as the cause. Klein has said : *Nullum tam peregrinum est symptoma tamque δαιμονι ακον, quod vermes excitare non possint.* We read in different works numerous examples of paralysis, of states of coma, of asthmas, of palpitations of the heart, of obstinate coughs, of epilepsy, hysteric convulsions, owing to this cause. There is no disease, even to tetanus, which has not been considered as resulting from the presence of worms in the intestinal canal. Since the time of Alexander of Tralles, it was said, that when worms passed from the small intestine into the stomach, they gave rise to severe cardialgia, to syncope, and that sudden death was sometimes the result of them.

It must be owned that such observations become much more rare, according as pathological anatomy is more generally and more carefully cultivated. But whilst we may distrust the reality of these extraordinary facts, we should take care not to deny the possibility of them. A hemiplegia occasioned by worms should not appear to us a more incredible phenomenon than paralysis consecutive on the introduction of particles of lead into the digestive passages. Now nothing unfortunately is more real and more common than this latter species of paralysis. The symptoms caused by worms must vary much according to their nature, their number, their more or less active life, their greater or less mobility, their more or less immediate contact with the mucous membrane, their situation in such or such a part of the digestive tube, the activity of the sympathies of the individual, his nervous susceptibility, etc. Some physicians, said De Haen, make worms perform too important a part in the production of diseases, whilst others do not pay sufficient attention to them.

In our patient, the portions of mucous membrane in contact with the worms were very white. At other times we found those animals plunged in a quantity of bloody mucus, and the mucous membrane very much inflamed around them.

CASE 5.—*Symptoms of ataxo-adynamic fever—Death towards the 18th day—Tumefaction of the follicles of the small intestine—Follicles of the colon more apparent than usual—Spleen large and soft—Pneumonia.*

A coach-driver, about twenty-five years of age, was brought to the hospital in a state of complete delirium. We could learn nothing regarding his previous state, except that he was ill for the last fifteen days. The eyes were injected, the cheeks red, the lips dry, tongue moist. He passed his fæces frequently under him. Pulse weak and frequent; skin not hot; some subsultus tendinum. (Two blisters to the legs; tisane d'orge gommée.)

On the next day, 18th December, continuance of the delirium; tongue dry; pulse very frequent and very weak.

On the 19th, for the first time, the patient answered questions, though still delirious. He had a very marked air of stupor; some petechiæ on the epigastrium; breathing hurried. (Sinapisms.)

On the 20th, the last degree of prostration; face cadaverous; pulse thready, and so frequent, that its beats were beyond counting; tongue dry and black; involuntary stools.

He died in the course of the day.

Post mortem. Brain healthy; a mixture of sero-sanguinolent engorgement and of red hepatisation in the lower lobe of the right lung.

Slight injection of the great cul de sac of the stomach. Perfect whiteness of the upper four-fifths of the small intestine; in the lower fifth several elevations of a red colour and oval form, separated by intervals in which the mucous membrane was white. No ulcerations.

Slight injection of the cæcum; in the descending colon isolated black points on the centre of a slight prominence of the mucous membrane (follicles).

Spleen large and very soft.

The subject of this case died at a period more remote from the commencement of the disease than the subjects of the preceding cases; however, the same alterations were found in the intestine; none of the exanthematous patches, which were observed on it, as yet presented any ulceration; we have already seen a case, where the disease was less ancient, and yet where the surface of these patches presented a slight commencement of solution of continuity. We shall see presently other instances of more considerable ulceration also at a less advanced period.

In this case we again see an instance of delirium without any appreciable lesion of the encephalon, and a dry black tongue, with a state of stomach such as is met in a number of cases, in which the tongue never changed from its natural state. Why was this tongue still moist on the day the patient entered the hospital? Why from the next day was it found so dry?

What symptom could have here caused one to suspect hepatisation of a part of the right lung? A little difficulty of breathing the day before his death was all that was observed with respect to the chest. This shows the necessity, in such cases, to practise auscultation and percussion, even when no sign induces us to suspect the existence of a disease of the respiratory organs. Here, also, it may be observed, that no other plan of treatment but that employed could have been opposed to this pneumonia; the symptoms contra-indicated the employment of blood-letting in any form, and the revulsives which were applied could have been the only means used to arrest the pneumonia.

CASE 6.—*Symptoms of ataxo-adynamic fever—Previous distress—Progressive derangement of the health—Death from the 25th to the 30th day—Tumefaction and redness of the intestinal follicles—Redness of the splenic portion of the stomach, and of the mucous membrane of the small intestine between the follicles—Red spots on the inner surface of the bladder—Spleen large and soft—Pneumonia.*

A man, fifty-five years of age, emaciated and of a delicate constitution, had previously been in tolerably easy circumstances; but for some years back he had been plunged into great distress, and now subsisted on a small pension, which was not sufficient to satisfy his wants. He dwelt in a very small room, situate very close to infectious privies. However, he had always enjoyed tolerably good health, when, towards the end of August, he was seized with violent angina, after plunging his feet into cold water whilst they were in a state of moisture. This angina was removed by the application of leeches to the neck; but from that time he continued in a delicate state of health. He felt at intervals headachs, severe lumbar pains, and lost his appetite; his strength was diminished. On the 12th September he was attacked with diarrhœa, which continued up to the 18th, when he entered the hospital. During this time he had not more than two or three liquid stools every twenty-four hours. On the morning of the 17th, he presented the following state:

Features sunk; prostration; tongue dry, brown in its centre; but little thirst; loss of appetite; abdomen free from pain; two liquid stools since the last twenty-four hours; pulse frequent and weak; but little heat of skin; a little excitement in his ideas.

Notwithstanding the adynamic aspect of the face, and the brown colour of the tongue, fifteen leeches were applied to the anus. (Emollient lavement; tisane d'orge edulcorée.)

On the next day, 18th, the entire upper surface of the tongue was black; in other respects his state was the same. (Barley; emollient lavement.)

No stool occurred up to the following morning; tongue dry and black; prostration still increasing; pulse very weak and frequent; skin not hot. However, in the midst of the general adynamic state, his ideas were still excited; the patient romanced very much; he was in a state bordering on delirium.

M. Lerminier determined on unloading the brain, on the one hand, and on the other to raise the strength; such was the object of the following prescriptions:—Four leeches behind each ear; two sinapisms in the evening around each leg; frictions of camphorated alchool on the extremities; lavement with an ounce of quinquina and a scruple of camphor; barley water, with a third of wine; mineral lemonade.

In the course of the day his ideas became lucid; the night was sufficiently calm. On the 20th his state scarcely changed. (The same prescription, except the leeches.)

The following twenty-four hours the fæces passed involuntarily three or four times. On the 21st, his mind still excited; the dryness and blackness of the tongue still continued; pulse thready; temperature of the skin as usual. (Two cups of infusion of quinquina, with the addition of syrup of orange peel.)

On the 22nd, 23rd, and 24th, no change in the patient; three or four alvine evacuations in the twenty-four hours; power of moving still remained; could raise himself up in the bed on his elbow, and remain in that position. His case did not yet seem hopeless. (The same treatment was continued.)

On the 26th the tongue was moist, and had partly lost the black appearance; none of the other symptoms were aggravated. He died, however, on the 27th, at one o'clock in the morning.

Post mortem, thirty-two hours after death.

Cranium.—Sub-arachnoid cellular tissue infiltrated with a little serum. Brain a little soft, not injected, neither were its membranes. About two spoonsful (cuillières à café) of limpid serum existed in each lateral ventricle. Nothing remarkable in the other parts of the encephalon.

Thorax.—The right lung, which adhered to the ribs by old cellular bands, was perfectly healthy; it was not even engorged. The same may be said of the anterior part of the left lung; but posteriorly its tissue, which was of a deep brown, was engorged with a great quantity of blood; it scarcely crepitated, and was broken into a pulp when pressed between the fingers.——The heart, which was well proportioned, contained in its right cavities a white fibrinous clot of considerable consistence, occupying both the auricle and ventricle. On pressing this clot between the fingers, a great quantity of serum was forced from it, and it was changed into an albuminous, thin membrane. Similar clots existed in the aorta, the inner surface of which was white.

Abdomen. The stomach was a little covered by the liver; its inner surface was white in the pyloric portion; but over the splenic portion numerous vascular ramifications appeared, around which small red points were collected. Grouped together in several places to a considerable number, they produced therein a uniform red colour. The vascular ramifications were seated in the laminated tissue, and the red points in the mucous membrane; small injected vessels formed them. The membrane, which was of considerable thickness, was detached every where without being torn. It appeared manifest that inflammation in the first stage existed in about two-thirds of the stomach.

The small intestine presented a white colour, of a slightly rose tint at intervals, to the extent of a foot and a half above the cæcum. Over this space the mucous membrane presented an intensely red colour, and a greater thickness than natural. In three places there were found oblong elevations, red as the rest of the membrane, being four lines in length to one or two in breadth. They would probably have been changed into ulcerations, if the individual had lived a longer time.

Immediately below the ileo-cæcal valve, the inner surface of the intestine changed its appearance. Instead of a uniform red colour, we observed on a white ground, a number of very small red patches, of a truly miliary size, rounded, oblong, or sinuous, the middle of which presented a white tint similar to the colour of the mucous membrane in the interval between the patches. This alteration existed from the cæcum to the sigmoid flexure of the colon. The rest of the large intestine was white: it was filled with liquid greenish matter.

The liver was remarkably hard; three small calculi, two miliary, and the third the size of a nut, were contained in the gall-bladder. The spleen, which was large, was reduced to a reddish pap by the slightest pressure. The bladder contained a small quantity of urine; its inner surface was marked with a great number of spots of a vermilion red, similar to those sometimes found in the stomach.

It is impossible to mark in this case the precise time when the intestinal lesion commenced. In this patient, who was placed in conditions which predisposed him to severe disease, we at first perceive the health to become deranged by little and little; symptoms then supervened one after the other with respect to the organs of deglutition, on the part of the head, the loins, and then the digestive tube: ultimately, the lesion of the latter part continued, and became predominant.

When the patient entered the hospital, he already presented that group of symptoms, which, in Pinel's school, characterise the adynamic state, and delirium soon came on. During the first days mere emollients were prescribed, the state of the patient became worse; tonics were tried; these at first were not more serviceable. However, it is worthy of remark, that two days after commencing the use of quinquina by the mouth, the tongue began to become moist and to lose its black coating; and, under the influence of this medicine, the diarrhœa did not increase. How are we to explain this change in the appearance of the tongue, after the administration of the quinquina, if we reflect on the intensely red state of the stomach, as seen in the post mortem? Is it the medicine itself which produced this redness? The tolerably good state of the strength, the free power of motion, still allowed some hope of recovery, when on a sudden the patient died. What part did the lung affection perform in the production of the symptoms and of death? We cannot tell; but here, again, the pulmonary affection remained completely latent, and was not discovered till after death. The state of the lung was very remarkable; it was rather a sort of pultaceous softening than a true hepatisation.

The noxious influences of air and diet to which this person had been exposed a long time before he became sick, the distress which he had experienced, might incline one to think that in him the first movement of derangement of the health had been a badly repaired state of the blood. This was one of the cases in which, *a priori*, one might admit an alteration of the blood as a primary cause of the morbid phenomena, and in which one might have expected to find it, after death, different from what it is in the normal state. However, it was not so; if the blood was altered, it was not at least altered in a manner appreciable by our senses: let us recollect, accordingly, the fibrinous clot of natural colour and consistence, which filled the cavities of the heart. In the diseases similar to those of which the preceding case is an instance, and which, in a language purely symptomatic, have been called typhoid fevers, the blood does not then always lose the property of coagulating after death, as has been asserted, and it cannot be established as a principle that, under such circumstances, it is found liquid in the vessels. Say, if you will, that in those diseases the alteration of the blood may be admitted, either from the study of the causes, or that of the symptoms; but acknowledge that, in many cases at least, it is solely by reasoning, and not by material proofs, that you are led to admit this alteration. In a subsequent part of this work, we shall find other cases where the blood, examined on the dead body, will present in its physical properties modifications which will not suffer us to call in question its real alteration.

CASE 7.—*Symptoms of fever at first inflammatory, then ataxo-adynamic—Death on the thirty-first day—Constant absence of diarrhœa—Tongue dry only on the two last days—At first copious bleeding, then stimulant treatment—Tumefaction of the intestinal follicles; livid redness of the inner surface of the cæcum and colon.—Redness and softness of the mucous membrane of the stomach.*

A sawyer, twenty-four years of age, was sick for ten days previous to his entering the Charité ; during this time he complained of headach, lassitude, and burning heat over the entire body ; on his admission he had considerable fever ; stools natural, abdomen soft and free from pain. At first we merely gave him demulcent ptisans. On the fourth day, the 8th of October, twelve leeches were applied to the anus.

On the 9th, headach less ; had a tranquil night ; fever less ; tongue whitish, red only at the apex; two stools. (Barley ptisan.)

During the night of the 9th, slight delirium. On the morning of the 10th, some depression ; pulse as it were rebounding, and of moderate frequency ; tongue covered with a yellowish coat. (Bleeding from the foot to the amount of three palettes.)

The night of the 10th was more tranquil than the preceding night. On the 11th the countenance was better, intellects and speech clearer and more distinct. But an inflammatory disposition seemed to exist at once in several organs ; the patient coughed much ; eyes red, as also the lips and tongue. Fever not intense ; pulse retained the same character, it seemed as it were to rebound under the finger ; another bleeding appeared to be indicated ; two palettes of blood were drawn from the arm, the blood resembled a soft clot, without a buffy coat. (Bourrache miellée, barley ptisan with oxymel.)

During the day the patient relapsed into the same state of depression as on the 10th : in the night his intellects again became disturbed. On the morning of the 12th, he answered questions with difficulty; his voice was tremulous ; commencing stupor was imprinted on his countenance. The tongue was red at the edges, white at the centre ; abdomen free from pain ; one stool ; pulse of moderate frequency ; continuance of the cough. The brain appeared to be the organ principally affected. (Sinapisms to the lower extremities.)

No change occurred during the day ; in the night violent hiccup manifested itself, which still continued on the morning of the 13th ; the same state in other respects. (Blister between the shoulders.)

The hiccup had not ceased on the 14th ; the patient raved in the night ; his features became quite immoveable ; his eyes avoided the light ; the tongue, which was moist, presented only a slight redness at its edges ; the abdomen began to become tympanitic ; no stool ; pulse very compressible, and ninety-two ; temperature of the skin almost natural. The following mixture was prescribed, to be taken in spoonfuls : orange-flower water, three ounces ; mint water, two ounces ; tincture of musk, one drachm (gros) ; laudanum, twelve drops ; syrup of violets, one ounce.

After the third spoonful was taken, the hiccup disappeared.

In the course of the day, a lavement of camomile with the addition of twelve grains of camphor was given. The patient drank some mineral lemonade and wine very much diluted.

On the 15th the hiccup had not re-appeared. (Same prescription.)

On the three following days, the state of the patient was unchanged. (The same medicines ; fomentations of camphorated oil of camomile on the abdomen.)

On the 19th, the mixture was replaced by four boluses of camphor and nitre, containing each six grains of camphor, and six of nitre, one to be taken every third hour. Tongue nearly natural ; abdomen sufficiently soft ; stools regular ; pulse compressible, and from ninety to ninety-five ; countenance still dejected.

On the 20th and 21st, the air of stupor visibly increased, without the other symptoms presenting any change. (Aqueous infusion of quinquina ; mineral lemonade ; barley water ; camphorated lavement ; aromatic frictions to the extremities.)

On the 22nd, pulse 104 ; same state in other respects. (Same prescription.)

In the night the patient had for the first time a profuse sweat ; it was confined, however, to the face, chest, and upper extremities ; it was far from being critical ;

frequency of the pulse still increased, it being now 120; tongue becoming dry. (Same prescription.)

On the 24th, features altered; spirits very much dejected; tongue entirely dry; pulse 142. (Blisters to the legs.)

He died on the morning of the 25th.

Post mortem. Nothing remarkable in the brain. Lungs engorged posteriorly Heart flaccid and empty.

Abdomen.—Stomach distended with the liquids he had taken, and with gas. The entire mucous membrane red and soft; beneath it the laminated tissue perceptibly injected. The small intestine was pale, and free from any lesion as far as half a foot above the ileo-cæcal valve. In this part the mucous membrane presented numerous white elevations surrounded by an equally white tissue. The surfaces of these elevations were as if wrinkled, and uneven; their form was oblong; their diameter equalled that of a twenty sous piece. The mucous membrane assumed a brown colour, to the extent of two or three fingers' breadth at most, above the valve. The inner surface of the cæcum, and ascending colon, presented an intensely livid redness; the remainder of the large intestine, which was filled with fæcal matter of considerable consistence, was white.

This case resembled, at its commencement, several of those already detailed. There was observed headach, general uneasiness, fever, loss of appetite, and nothing else connected with the digestive organs.

These symptoms, combatted at first by means of simple diluents, continued; they were those characterising inflammatory fever, as it is described by Pinel. They were diminished after the application of leeches to the anus; but this amendment was but temporary. Two days after the application of the leeches, all the symptoms re-appeared with increased intensity; the pulse in particular presented that special character often connected with hemorrhage, and which seemed to indicate the employment of bloodletting; a bleeding from the foot was accordingly employed, and was followed by an improvement in the state of the patient: above all, the strength seemed to be increased; one would then naturally think that it was only *oppressed*; and as several organs still seemed threatened with inflammation, one would reasonably suppose that another bleeding would prove as serviceable as the two preceding; this was accordingly employed, but not with the same results. A few hours after its employment, the symptoms became frightfully worse, and we almost instantaneously saw an inflammatory fever, which appeared not at all severe, become changed into a well-marked ataxo-adynamic fever; the pulse suddenly changed its character; it became small, and no longer resisted the pressure of the finger. A little meteorism supervened; no other appreciable symptom connected with the digestive organs. Then another plan of treatment was resorted to. Tincture of musk was given for the special purpose of combatting the hiccup which a blister had not removed. This hiccup ceased accordingly a little after we commenced the use of this substance combined with a little laudanum. Different stimulants, such as camphor, nitre, wine diluted with water, sulphuric lemonade, were then given. For four days the disease remained stationary. The tongue presented an almost natural appearance; abdomen soft; stools regular; but the pulse still retained its frequency. The air of stupor did not first diminish; it afterwards increased. Recourse was then had to infusion of quinquina. The very day he commenced to take it, the frequency of the pulse evidently increased; the day after it was still greater. *The tongue became dry*, for the first time, and the patient died in a state of prostration which suddenly became extreme.

The post mortem showed the same lesion in the intestinal follicles as in the subjects of the preceding cases. It also showed, in a part of the large intestine, a redness which is so much the more remarkable, as the individual had never had diarrhœa; finally, the autopsy discovered to us a morbid state of the stomach, more intense than in any of the preceding cases. Is it not a remarkable circumstance, that it is in the two first subjects who took quinquina that we found the stomach more diseased than in any of the others? I would be inclined to think that it was only towards the last period that the gastritis set in, and that it was of it the patient died. We have found the stomach healthy, and the small intestine exanthematous in other persons who had had the tongue dry and black.—Here we may suppose that the period at which the tongue began to dry coincided with the development of the gastric irritation. But why did it remain in an almost natural state whilst there was only exantheme of the intestine? There are then other conditions, which, independently of the existence of this exantheme, may cause a singular change in the state of the tongue. It is those same conditions, which may be supposed to reside in the innervation, which, with a lesion similar in its nature, in its degree, in its seat, and in its extent, impressed so different an aspect on the diseases mentioned in the preceding cases.

Case 8.—*Febrile diarrhœa at the time of admission—Improvement by means of diet and diluent drinks—Suddenly severe nervous symptoms and death—Indeterminate duration of the disease—Treatment by blood-letting and revulsives—Tumefaction of the intestinal follicles—Small red spots in the stomach—Spleen large and soft—Blood liquid.*

A man, twenty-eight years of age, who had recently come to Paris, entered the Charité in the month of November, with slight purging and very little fever. Both were nearly checked by diet and diluents, when, without any known cause, the patient fell into the greatest despondency; from thenceforward he was convinced that his death was near at hand, and inevitable. However, the pulse had not become frequent. This state of mind continued for two days. Every effort was used, but in vain, to persuade the patient that his fears had no foundation.—On the third day, November 23, his intellects became disturbed; pulse became hurried: the next day there was intense fever; a little diarrhœa always remained; intellects more disturbed. On the 25th, complete delirium: at six in the morning the patient was found out of his bed, to which by our remonstrances he returned; and, though answering our questions with considerable clearness, he was evidently still disturbed in his ideas; his eye haggard; pulse very frequent; skin very hot; face covered with a profuse sweat; tongue still moist, and its apex red.

On the 26th, he lay on his back, his eye fixed, and his look melancholy; face red, and covered with sweat; he viewed those around him with a disdainful and angry frown, and refused to answer questions or to show his tongue; when questioned he frowned, and uttered with a strong voice some unconnected words; arterial pulsations so frequent that they can be no longer counted; death occurred on the following night.

Dating from the 23rd of November, leeches were several times applied to the neck and to the anus; the leeches were covered with blisters; simple diluents were given internally.

Post mortem. Muscles were brown and gluey (poisseux).

The brain and its membranes presented no appreciable lesion.

Lungs engorged posteriorly. A considerable number of veins, gorged with blood, passed over the cellular tissue subjacent to the mucous membrane of the stomach. The latter membrane presented, towards the great cul de sac, five or six red patches, in other parts it was white and healthy. The small intestine was healthy, to within a foot above the ileo-cæcal valve. In this part there was observed a number of elevations of different appearances. Some of them red and conical, were nearly the size of a pea; others, similar to the preceding in form and extent, differed from them in the whiteness of their colour. Others, much larger, round or oblong, red, or of a duller white than the rest of the membrane, had a diameter equal to that of a ten sous piece for the smaller, and of a five franc piece for the larger. In the intervals between them, the mucous membrane was sometimes white and sometimes red. This eruption, at first distinct, became confluent near the valve. Immediately above the latter, several elevations were combined into a single one, so as to form a large patch, which occupied nearly the entire round of the intestine.

The cæcum was very much injected; the mesenteric ganglions were red and engorged. The spleen was remarkable for its size and extreme softness.——A liquid black blood was found in the aorta, as also in the heart, the tissue of which was pale and flaccid.

This case presents three stages.—In the first, the digestive passages appear to be especially affected, and the fever to be merely symptomatic of the intestinal irritation evinced by the diarrhœa. At this stage the case presents nothing serious; diet and some diluents suffice to diminish the purging, and to calm the fever. Then commences the second stage, during which one might reasonably suppose that the patient is becoming convalescent. It is then that the mental dejection, into which, without any known cause, the patient fell all at once, appears as a prelude to a state of delirium, in the midst of which the patient dies. This mental dejection, so far from being the cause of the nervous symptoms, was, probably, itself one of the symptoms of the cerebral affection, which, however, escaped all anatomical investigation. The brain, the functions of which had been so perceptibly disturbed up to the time of death, appeared healthy under the scalpel. What did we find to account for such serious functional disturbances? Nothing but some slight red spots in the stomach, and, as in all the other cases, an engorgement of some intestinal follicles. In all this where is the cause of the symptoms? Very probably, as the former case mentioned, and some others to be mentioned hereafter, tend to prove, at the time the patient entered the hospital, he already carried in the intestine most of the lesions found there after death: yet there was then no serious symptom, and those which did exist yielded to the most simple means. Did the intestinal exantheme suddenly take on a rapid degree of increase after having first retrograded, or at least after having remained stationary? If, in this case, there is obscurity in explaining the symptoms, is there not much more difficulty in accounting for death? The patient died when he was still full of life, when, a little time before expiring, the energy of his movements, and the strength of his voice, prevented us from foreseeing so rapidly fatal a termination.

In fine, what relations are there between the symptoms and death in this case, and the state in which the blood and spleen were found?

SECTION II.

CONTINUED FEVERS, WITH LESION OF THE FOLLICLES IN THE STAGE OF ULCERATION.

In the cases now mentioned, we have seen a lesion always identical coincide with the symptoms of different continued fevers. In the persons who died towards the sixth day, as in those who died after the thirtieth, we found this lesion always similar to itself. The lesion observed was uniformly follicles, which were become more prominent on the surface of the mucous membrane, but the texture of which was readily recognised. In the cases which are to follow, we shall find something else: the follicular layer, whether, after having been changed into a hard, grey, brown or black mass, similar to an eschar, or without having undergone this change, and without being gangrenous, shall disappear, and in its place we shall find ulcerations very variable in their extent, though varying but little in their form and their seat. Often also we shall find other ulcerations occupying the place of a certain number of isolated follicles, the destruction of which we shall be able to trace from the summit to the base. By reading these different cases we shall soon satisfy ourselves that the transition of the follicular disease into the state of ulceration does not happen at a period always the same. Thus, as we have already seen, there are cases where, after more than thirty days' duration, no follicular patch is as yet ulcerated ; there are other cases, on the contrary, where, a very few days after their development commenced, they came to be ulcerated.—We shall commence by citing a case of this latter kind, in which, on an exanthematous patch, there was found but one single ulceration of very small extent, which, by increasing in depth, produced a fatal perforation. This should be compared with a former case, where an intercurrent pneumonia gave rise also to a premature death. Both seem to us important, inasmuch as they show that at a period of fever not at all far advanced, and when there as yet exist but very mild symptoms, there exists in the intestine the same lesion as that discovered in cases infinitely more alarming.

Case 9.—*Slight continued fever—Yellow coating of the tongue; constipation at first, then slight diarrhœa—Tumefaction of the follicles; one single ulceration on one of the patches, which terminated in perforation of the intestine—Death by peritonitis on the thirteenth day of the fever—Communication between the digestive tube and the peritoneal cavity—Pulmonary tubercles.*

A man, about eighteen years old, of a lymphatico-sanguineous temperament, had always enjoyed very good health. On the 13th of October, at seven in the evening, he felt dizziness and general uneasiness. All the night he experienced a burning heat. The day after, in the same state; anorexia, one alvine evacuation; profuse sweat at night. On the 15th he entered the Charité. He again perspired on the night of the 15th. On the visit of the 16th, he presented the following state :—

Face red, eyes very bright; aching of the limbs; tongue covered with a yellowish thick coat; lips red, bad taste in the mouth; anorexia; little thirst; abdomen soft, and free from pain; no stool for the last twenty-four hours; pulse frequent, tolerably full; skin moist.

After a lavement having been given, the patient had but one stool up to the next morning. On the 17th, six grains of ipecacuanha were given; the patient vomited twice a considerable quantity of bile; he did not go to stool. In the night he slept well; he awoke in a state of moisture.

The next morning, the yellowish coating of the tongue was gone; it was now of a fine vermilion colour; bad taste of the mouth gone; pulse not frequent; temperature of the skin nearly natural.

From the 19th to the 23rd, a slight febrile disturbance continued; anorexia; same state of the tongue. A stool each day after the lavement. (Demulcent ptisans, &c.)

On the 23rd the tongue was red; the frequency of the pulse had increased considerably; skin burning hot; abdomen painful on pressure. Two liquid stools took place within the last twenty-four hours. This exasperation of the symptoms was combatted by the application of eight leeches to the anus. (Barley ptisan; diet.)

In the day the abdominal pains assumed a frightful intensity. The patient began to vomit, during the night, a great quantity of green bile.

On the morning of the 24th, we found him lying on the right side; eye quite extinct; countenance pale and cadaverous. The slightest pressure on the abdomen, or the least motion, excited the most intense pain. Continual nausea harassed the patient, which was followed from time to time by some bilious vomiting. The respiration, which was high and hurried, was performed solely by raising the ribs; pulse very frequent and weak; skin not hot.

The presence of peritonitis no longer questionable. M. Lerminier suspected the cause to be perforation of the intestine. (Forty leeches to the abdomen; oily fomentations; mild sinapisms to the legs in the evening; flax-seed ptisan.)

The vomiting continued for the entire day. On the 25th, at nine in the morning, abdomen less painful on pressure, but it was increased in size, and presented a shining appearance; on percussion it yielded in every part a dull sound; no fluctuation perceptible. Extremities cold, pulse thready. The eye, however, still retained a somewhat natural expression: intelligence clear, speech free. (Blisters to the thighs.) He died at five in the evening.

Post mortem fifteen hours after death. Albuminous flocculi, extended like false membranes, united the convolutions of the small intestine to each other. A turbid, milky, very fœtid serum was effused into the two flanks, and into the cavity of the lesser pelvis. Beneath the albuminous flocculi, the peritoneum was intensely injected.

Mucous membrane of the stomach healthy; over the extent of about one foot above the ileo-cæcal valve, there existed from five to six oval elevations of a white colour, as also in the mucous membrane which surrounded them. The centre of one of them was ulcerated; the bottom of this ulcer, formed by the serous membrane, presented at its centre a round perforation, from a line and a half to two lines in diameter. Around these elevations, the mucous membrane was studded with several small, white, miliary pustules, scarcely forming a projection above its surface.

A tuberculous mass, the size of a small nut, was found in the summit of the right lung.

The principal circumstance which renders this case interesting, is the existence of a well-marked dothinenterite in an individual, who, up to the period of the attack of the peritonitis, presented merely the symptoms of a continued fever apparently mild. It was, with respect to the symptoms, *a slight bilious fever;* the abdomen was soft and free from pain in every point. The tongue, free from redness, presented a thick coat, which disappeared after a gentle vomit. After the use of this, the gastric symptoms disappeared; but a little fever remained, and presently a slight diarrhœa succeeded to the constipation which existed since the commencement of the disease. It was from the tenth to the eleventh day that this purging appeared. Did its invasion mark the period when one of the exanthematous patches began to ulcerate? Nearly at the same time supervened the peritonitis, the cause of which was discovered to be the intestinal ulceration, which, by extending in depth, had occasioned the perforation of the parietes of the ileum.

Thus in this case, to explain the group of symptoms observed during life, before the attack of the peritonitis, there is found a disease of the follicles; they are swollen without being red, and one of the patches which they constitute by their union is already ulcerated. We shall not find more intense lesions in other cases, which shall, however, present to us symptoms of a much severer nature. On the other hand, we have already seen in the former observations, an instance wherein the symptoms are almost similar to those presented by the subject of the present case, and in which, to explain these symptoms, which were those of a rather slight bilious fever, we still found the same lesion of the intestinal follicles. It is not then in typhoid fevers alone that this lesion exists.

We should note, in this case, the coincidence of the healthy state of the stomach with a red colour of the tongue; and we should recollect that, at least in individual, the vomiting which was excited had not the effect of replacing the signs of gastric derangement by those of a more intense gastritis. After the vomit the tongue assumed a natural appearance, and it was only at a subsequent period it became red, at the time when the diarrhœa appeared.

The existence of some tubercles in the summit of the lung is worthy of being remarked in an individual, who, being attentively examined during the entire course of the disease, presented no symptom which could induce us to suspect such a lesion; he had considerable flesh, his breathing appeared free, and he had no cough.

Case 10.—*New arrival at Paris—Symptoms of slight bilious fever—No improvement after a vomit—Epistaxis followed by a sensible improvement—Hope of approaching convalescence; sudden death on the fourteenth day—Some ulcerations towards the termination of the small intestine—Pulmonary tubercles.*

A tailor, nineteen years of age, residing in Paris for the last six weeks, felt on December the 8th, without any known cause, a violent shivering, followed by great heat, without sweat. On the following days he felt continual heat, some headach, great physical and mental dejection; distaste for all food, and no alvine evacuation. Having entered the Charité on the 25th, he presented all the characters of what is called bilious fever. (Two grains of tartar emetic were given.) The patient did not vomit, and went several times to stool. In the night he sweated profusely. However, on the 26th, the fever still continued; the tongue was red. Up to the 31st, the state of the patient remained nearly the same. He had some diarrhœa; sweated every night; he only took some demulcent ptisans. On the night of the 30th (the fourteenth day), he had profuse epistaxis, and at the same time all the other symptoms improved. This hemorrhage might be reasonably considered as critical. In the course of the day the patient found himself tolerably well; the fever was very moderate. Towards noon he arose from bed to go to the night-chair; he had scarcely returned to the bed, when he expired.

Post mortem. The body, when opened on the next day, presented no lesion which could account for so sudden a death. The lungs merely presented some very slight engorgement posteriorly; the summit of the right lung contained five or six large crude tubercles, without hepatisation around them.

The inner surface of the stomach was of a white colour, with a slight rose tint. To the extent of some fingers' breadth above the cæcum, the mucous membrane of the small intestine presented seven or eight small ulcerations, with slight redness around them; the cæcum was red.

This is the third case in which we ascertain the state of the digestive tube in an individual who presented nothing but symptoms of slight continued fever (the bilious inflammatory fever of authors), without any complication, adynamic or ataxic. Here, then, are three cases, where the symptoms of this fever coincide with one and the same species of intestinal lesion, a lesion which is only, in these three cases, in different degrees: it is simple exantheme, in the subject of the first case, who died on the sixth day; it is an exantheme with commencing ulceration, in the subject of the ninth case, who died on the third day. In the subject of the present case, who died on the 14th or 15th day, we find merely ulcerations. But what is more remarkable in this latter case is, that notwithstanding the presence of the ulcerations, there was since the last two days a perceptible tendency to improvement. As in the subject of the ninth case, the stomach was healthy. As in that case, a vomit was given; but this treatment produced here no good result.

What now was the cause of the sudden unforeseen death of this patient?—Anatomy was unable to solvé the question.

Among the cases of sudden death, which cannot be explained by any appreciable lesion, the following appears to us one of the most remakable.

A boy, from four to five years of age, entered the Hôpital des Enfans, having tinea capitis for some months; he was attacked with pulmonary catarrh and diarrhœa. This twofold attack yielded in a little time to demulcent treatment.

The child had still a little cough, but the purging had entirely ceased; he got out of bed and walked about every day. On the 23rd of August he was sprightly as usual, got up, went to the night chair, then went to sit down, saying that he was disposed to sleep. It was imagined that he really was asleep. Seven or eight minutes after he died.

No appreciable lesion was found in the brain or its appendages; lungs healthy, as also the heart and large vessels. The inner surface of the stomach presented a white colour, with a slight rose tint, and some red spots here and there; the rest of the digestive canal was in general white, injected at intervals; the other organs were healthy.

Does the heart, in cases of this kind, cease to beat all at once? Is not death then a prolonged syncope? Are the functions of the brain suspended primarily and all at once? Thus individuals die instantaneously who have received a violent electric shock; animals who have been poisoned with hydro-cyanic acid, &c.

Be this as it may, observations of this kind should make us very circumspect in pronouncing whether such a lesion observed in a dead body should be really considered as the cause of the disease, and of death. On the other hand, the opening of bodies sometimes discovers in the organs most important to life, considerable alterations not announced by any symptom. How difficult is the attempt of that person who seeks to raise a corner of the veil with which nature envelopes her works, whether she tends to create, to preserve, or to destroy! *Homunciones nos! observata colligimus legesque condimus ex iisdem, dum interim nos sæpe in observatis vel unicum lateat, ex quo vera rerum dependeat notities.* (De Haen.)

Let us now carry our attention to the pulmonary phthisis, of which the patient carried the germ, and which had not yet revealed its existence by any species of symptom. The tubercles contained in the summit of the left lung might have remained stationary for a length of years, and not have prevented the individual from attaining the mean duration of life; but in persons so circumstanced, the slightest irritation directed to the lungs is attended with the worst consequences; it contributes very much to augment the tubercular diathesis, and to hasten the softening of the tubercles already existing. Such is the first stage of the phthisis of Bayle. The autopsy discovers it in individuals who have scarcely had a slight cold during life. It is principally from these facts that Bayle has maintained that pulmonary tubercles were not a product of inflammation, in the sense ordinarily attached to this term. Those who maintain the contrary doctrine are obliged to admit a disposition peculiar to tuberculisation in the individuals in whom the development of the tubercles has succeeded to an inflammation of the bronchi, or of the tissue of the lung. But does not this sort of idiosyncrasy resemble very strongly the innate germ of phthisis, which Bayle admitted, and for which he has been so severely reproached?

CASE 11.—*Disturbance of the intelligence without any other serious symptom—Tongue dry from time to time—Strength still retained—Unexpected death—Ulcerations in the small intestine.*

A German, fifty-six years old, entered the hospital on the 29th of November. He could give no account of his previous state. He seemed absorbed in religious feelings. Countenance pale and meagre; strength seemed well preserved; tongue dry and pale. He went to stool as in health. Skin hot; pulse frequent and hard; breathing natural; chest, when percussed, sounded well.

The marked stupor of this patient's intellects, the species of ecstasy in which he was, might be considered as the prelude to ataxic fever. The indication seemed to be to unload the brain. (Twenty leeches to the anus; barley ptisan; emollient lavement.)

On the next day, his state not altered. The following days the fever still continued; intellectual faculties nearly abolished; tongue pale, and alternately moist and dry; strength still preserved. On the 8th of December, the state of ecstasy more marked than ever; answers slow and confused. (Bleeding to two palettes.) No good result from it: his state even worse than the day before. Tongue brown; had some transitory delirium and considerable fever; coughed a little. The continuance of the strength of the pulse appeared to be connected with hypertrophy of the left ventricle. The stethoscope, in fact, when applied to the precordial region, was a little repelled; with the hand nothing unnatural could be discovered in the pulsations of the heart Still the patient was even now able to sit up; he ate two small biscuits with an appetite; his state remained unaltered during the day, and to our great surprise he died that night.

Post mortem twenty-eight hours after death. The subarachnoid cellular tissue was infiltrated with a considerable quantity of limpid colourless serum. The parietes of the left ventricle were, as we anticipated, very much hypertrophied, and its cavity diminished. Old cellular adhesions were found in the two pleuræ. The base of the right lung was of a greyish red colour, its tissue, which did not crepitate, was reduced to a pulp beneath the finger; every where else, the lungs crepitated very well; an enormous quantity of frothy colourless serum flowed from them on making an incision into them.

The stomach was dilated; its inner surface presented, at the great cul de sac, and along the anterior surface, to nearly as far as the pylorus, a brown colour, with a mixture of small black spots; this colour and these spots existed in the softened mucous membrane. The inner surface of the small intestine was very white to near the cæcum; it was, however, very much narrowed in all its extent. At five fingers' breadth above the cæcum there was an ulcer of considerable breadth, the bottom of which was formed by the muscular membrane laid bare, and the edges were formed by the mucous membrane, which was tumefied, soft, and black; this membrane presented the same appearance as far as the cæcum, the mucous membrane of which was white; the rest of the large intestine was healthy.

In this patient we find nearly the same lesions of the digestive tube as the preceding; and yet what a difference in the symptoms! In this case also death was unexpected. On examining the state of the different functions, considering more particularly the circumstance of the strength being still retained, could one anticipate that a few hours after the visit, the patient would have died without any new phenomenon developing itself? Can we seek the cause of this in the very extensive œdema of which the lungs were the seat? Can we suppose that during the night of the 10th of December, the lungs became suddenly engorged with serum, in the same manner as we see serous accumulations take place, sometimes almost instantaneously, in other parts of the body? Is it rather in the organic state of the heart we should place the cause of death? We know sudden death is by no means an uncommon occurrence in individuals affected with aneurisms of the heart, though even but little advanced, and which do not as yet manifest their existence by any well-marked symptom. It seems that in several of these patients the heart momentarily loses the power of contracting: after that the blood no longer reaches the brain, the breathing becomes suspended; and if this cessation of the heart's action is continued, the syncope changes into real death. We may remark that none of these circumstances existed in the preceding patient, whose death came on even still more unexpectedly.

Was the peculiar state of the intellectual faculties a sympathetic phenomenon connected with the inflammation of which the stomach and the termination of the small intestine were the seat? Did the entire disease exist in the digestive tube?

The inflammation of the right lung existed for some days at least, as was proved by the state of the organ; but could it be even suspected? Occupying only the base of the lung, it could not be recognised either by percussion or auscultation; the breathing was perfectly free, the sputa were absent, and as to the very slight cough which existed, should it not reasonably be referred solely to inflammation of the bronchi?

The character of the pulse, in this patient, likewise merits all our attention. How insufficient are the signs derived from the arterial pulsations, when we have not at the same time regard to the state of the heart!

Case 12.—*Previous mental and bodily distress—Remittent fever combated by quinquina—Disappearance of the daily shivering; continuation of the same medicine; ataxo-adynamic symptoms—Death towards the 25th day—Change of the follicular patches into a hard mass like an eschar—Milky infiltration of the cerebral membranes—Brain dotted—Softening of the lungs.*

A carpenter, twenty-six years of age, of a strong make, living in a moist situation, experienced some mental distress and considerable bodily fatigue at the commencement of the year 1820. Towards the 15th of October of the same year, he was seized with spontaneous lassitude, pains in the kidneys and limbs; he lost all appetite. These symptoms continued on the following days. He had a regular shivering fit every day towards two o'clock at noon, which was replaced by an intense heat, not followed by any sweat. This man consulted several medical men who made him take a vomit and two purgatives; he than drank a bitter ptisan. He had profuse diarrhœa from the day he took the vomit. He entered the Charité on the 1st of November, when two palettes of blood were taken from him, and twenty leeches applied to the anus.

On the 2nd of November, the blood drawn the preceding day was covered with a buffy coat of little consistence; the patient presented the following state:—general lassitude, sleeplessness, tinnitus aurium, nostrils dry, mouth bitter, tongue yellowish, having a tendency to become dry without any redness; little thirst, anorexia, abdomen soft, a little painful on pressure; five very liquid stools, breathing full and easy; speech short; pulse full and frequent; skin a little moist. The daily shiverings indicated the presence of remittent fever, which was combatted by a watery infusion of quinquina sweetened with syrup of quince. (Barley water; sinapisms to the legs.)

Shivering entirely absent. On the next morning there was a sensible improvement; the patient had some sleep; tongue moist; pulse less frequent; gentle heat of the skin; abdomen soft and free from pain, continuance of the diarrhœa. (Same prescription.)

This improvement was but transient, and on the 4th, the most alarming symptoms existed. An air of stupor; extreme prostration of strength; tongue dry and black; great thirst; abdomen free from pain; two stools only; pulse very frequent. (Two blisters to the legs, frictions with camphorated alcohol on the extremities; the same drinks, and some mineral lemonade, and a little wine.)

In the afternoon the patient commenced to rave; his ideas were very incoherent for the entire night. On the morning of the 5th, the delirium continued; the other symptoms had not changed. (Four leeches were applied behind each ear, and two blisters were placed on the thighs.)

On the 6th, the same state. (Eight leeches more to the neck.)

On the 7th, less delirium, but extreme dejection; features entirely decomposed; sensation of acute pain in the loins; burning thirst; tongue black; abdomen tympanitic and free from pain; five or six liquid stools passed in bed; skin dry and hot; pulse very frequent, and possessing considerable resistance. (More leeches to the neck.)

On the 8th, the countenance indicated the most extreme dejection; breathing very much accelerated; tongue clammy, less dry than on the preceding days; abdomen tympanitic; intelligence quite gone.

He died on the 9th, at five o'clock in the morning.

Post mortem thirty hours after death. *Cranium.*—A turbid milky serum existed in small quantity in the subarachnoid cellular tissue of the upper surface of the two cerebral hemispheres. The cerebral substance, of ordinary consistence, was dotted with red points; black liquid blood distended the sinuses of the dura mater; a small spoonful of limpid serum existed in each of the lateral ventricles.

Thorax.—Heart proportioned to the size of the individual and to the development of the muscular system. The two lungs were of a livid red colour posteriorly and at their base; they were engorged with an enormous quantity of reddish serum; their tissue crepitated, but was extremely soft; it was reduced to a sort of a pulp under pressure of the finger.

Abdomen.—The stomach was moderately distended with a brownish liquid and with gases; its inner surface was of a greyish white colour in all its extent, except along the small curvature, where we observed two or three red bands, which, without assuming a regular form, were continued from the cardia to the pyloric extremity. On placing this part of the stomach between the light and the eye, there was distinctly perceived a number of vessels, which were ramified, and between them several small reddish points, which appeared to be formed of effused blood.

The small and large intestine, when examined internally, presented a great number of patches of a bright red colour, presenting, on an average, about two or three fingers' breadth in length, and one, or at most two, in breadth. These patches were formed of ramified vessels, around which there existed some red points; they were seated in the cellular tissue which united the peritoneal to the muscular membrane; the corresponding portion of mucous membrane was not changed.

The small intestine, when examined internally, was healthy along the upper four-fifths. The lower fifth, hard and bosselated (bosselé) externally, presented internally numerous elevations, of an oval or irregularly circular form, covered with a sort of *detritus* of a yellowish grey colour, which was raised by scraping with the scalpel. Beneath this detritus there was found a hard tissue, of a violet red colour, appearing to be formed of submucous cellular tissue considerably thickened. Of these elevations the most extensive were from three to four inches in diameter in every direction; the smallest were scarcely from two to three lines. In the intervals between them the mucous membrane was very much injected. Near the ileo-cæcal valve, and even on this valve, they were so close that they formed but one single bosselated and wrinkled mass, of a yellowish grey colour. This alteration terminated abruptly at the entrance of the cæcum. The inner surface of this latter intestine was very red, as also that of the ascending colon. These two intestines were filled with a reddish and as it were bloody mucus; the mucous membrane of the rest of the large intestine was very white.

The alteration of the intestinal follicles in this case differs from that presented to us in the preceding cases; it is no longer simple tumefaction of the glands (plaques) that is observed, it is their change into eschars. Had the individual lived longer, these eschars would have been detached, and ulcerations would have replaced them. This is one of the morbid forms which Peyer's glands present before becoming ulcerated; the cure could not be effected, without their ulceration had previously taken place. Here the follicular layer is no longer distinct: in its place we find merely a hard, yellowish mass, removeable by the scalpel, as a sort of detritus. In the following observations we shall see this layer already so altered, assume still further all the characters of a true eschar, become separated in shreds from the subjacent tissues, and leave in their place ulcerations of variable size. This case then presents to us an instance of the transition from the first to the second stage of dothinenteritis : there is no doubt, if the individual had lived longer, but that ulcerations would have been found in his intestine.

If we now inquire what were the symptoms which coincided with this state of the intestine, we shall find that these symptoms are similar to those already presented to us by other individuals, in whom the dothinenteritis had not gone beyond the first stage.

With respect to the symptoms, the disease which forms the subject of this case presents three stages to be considered. In the first we see nothing but those general symptoms, which precede most local diseases, pneumonia as well as enteritis, but which, however, are more frequently the precursors of gastro-intestinal inflammations. The second stage is marked by the existence of a remittent fever, which becomes a simple continued fever after the exhibition of quinquina. These accessions, which thus returned every day, but which, commencing with shivering, never terminated by a sweat, were they connected with the intestinal exantheme? Were they but an additional phenomenon? We shall not decide these questions ; but with respect to treatment, we shall observe that if the quinquina prevented the return of the shivering, and if it thus had a marked anti-periodical action ; if even the day after it was given for the first time, there was a perceptible improvement ; if in particular, we found the tongue moist its continual administration on the following days was followed by considerable prostration, and most serious nervous symptoms, which were not removed by leeches applied to the neck and behind the ears. These nervous symptoms were connected, in this particular case, with a morbid state of the meninges. As in other cases already cited, we found the gastric mucous membrane injected and dotted, in a person who for several days had taken different stimulating drinks, quinquina, wine, sulphuric lemonade.

Case 13.—*Previous fatigue—Fever at first remittent—Bad effect of an emeto-cathartic—Adynamic state becoming more and more marked after blood-letting, not diminished by tonics—Death towards the 46th day—In the small intestine follicular patches attacked with gangrene and ulcerated—In the large intestine white ulcers without any redness around them—Submucous sanguineous effusion in the stomach—Another effusion of blood in the pleura—Liquid blood in the vessels; aorta red—Spleen large and soft.*

A quarry-man, twenty-eight years of age, brown skin, black hair, muscles well developed, was very much harassed with work during the first half of the month of July. Towards July the 20th, he commenced to feel ill ; intense headach ; his appetite was lost, strength impaired ; he was given an emeto-cathartic ; he vomited copiously, and went several times to stool. From this period he had diarrhœa. Dating from the commencement of August, he kept his room, and soon kept his bed. All the day he experienced a burning heat ; at night he felt considerable cold in the feet and legs ; he sweated very much every night. He took no active medicine up to August 28th ; he then entered the hospital and presented the following state :—

Sub-orbital headach, face red, eyes brilliant, pains in the limbs, general debility ; tongue covered with a slight whitish coat ; bitter taste in the mouth ; thirst ; anorexia ; abdomen free from pain, and soft ; four or five stools within the last twenty-four hours, preceded by slight colics ; slight cough ; sensation of heat in the throat, deglutition painful ; pulse frequent, of ordinary strength ; skin hot, and a little moist.

No precise indication presented itself ; the symptoms were sufficiently moderate to induce one to think that they would yield to simple diluents, diet, and repose (Rice water with gum.)

The patient went but twice to stool, up to the next morning. Partial cold in the evening and sweat during the night, as usual. At the visit of the 29th, there was still headach, redness of the face, and injection of the conjunctivæ; cough more frequent; pulse fuller. Thus the state of general erethism had increased. (Blood-letting to four palettes.)

The blood drawn from the vein united into a large clot, which was soft and without the buffy coat. The febrile exacerbation was very great in the evening.

On the 30th, the redness of the face had been succeeded by remarkable paleness; the tongue, divested of its whitish coat, presented a uniform red colour; lips, teeth, and nares dry; four liquid stools had taken place; abdomen soft; pulse frequent, and very compressible; heat of skin not much raised. (Barley ptisan with gum; strict diet.) Exacerbation in the evening, without the sensation of previous cold; sweats and distressing raving during the night.

On the 31st an air of stupor; same state in other respects. (Two blisters to the legs.) In the evening a slight disturbance in his ideas.

September 1st, air of stupor more marked; patient had now become very deaf; his intellect in other respects sufficiently clear; he had got out of bed thrice to go to stool. Tongue dry; abdomen tympanitic; pulse very frequent, and compressible. (Six leeches behind each ear; embrocations of camphorated oil of camomile to the abdomen; camomile lavement with the addition of twelve grains of camphor; barley ptisan.)

The leeches acted very well; and on the morning of the 2nd, several of the bites were still bleeding; the stupor went on increasing. The leaden cast of the countenance, the dull expression of the eyes, which were half-covered by the upper eyelid, the increased deafness, the slowness and uncertainty of the answers, the extreme weakness of the pulse, which was as it were tremulous, and which beat above 130 a minute, the particular manner in which the patient lay, he always sliding down towards the foot of the bed, announced the existence of an adynamic state, which called for urgent treatment. The tongue was at the same time dry and pale, the abdomen tolerably soft; he had had but two stools. Two more blisters were applied to the thighs; those of the legs were dry. (Infusion of quinquina with gum, decoction of polygala, lavement and embrocations as on the day before.)

In the evening the state of the patient seemed to have undergone a slight improvement; the expression of the countenance was somewhat more animated; he lay of himself on the right side; the pulse was somewhat raised; three or four of the leech-bites were still bleeding, notwithstanding the efforts made to stop them.

During the night the patient was completely delirious.

On the 3rd, the tongue was moist; the teeth were covered with black crusts, some lenticular spots, of a livid tint, were scattered over the epigastrium. (The same drinks; lavement with an ounce of quinquina and twelve grains of camphor; liniment of ammonia with the addition of an ounce of tincture of lavender to rub the extremities.)

Up to the following morning the patient continued in a continued state of coma.

On the 4th, the countenance became cadaverous; gave no answers to questions; put out his tongue, when asked, which was pale, moist, and slightly incrusted at the centre. Lips and teeth black; four involuntary stools; pulse 144. Some wine was ordered.

The patient went on sinking, and died at five o'clock the next morning.

Post mortem twenty-nine hours after death. Brain and its membranes remarkably pale; ventricles nearly empty.

Thorax.—Heart, empty of blood, presented a soft, flaccid tissue, entirely divested of colour; a great quantity of bloody serum, of a deep brown colour, engorged both lungs. About a pint of a black liquid, presenting all the physical properties of venous blood, was effused into each pleura, which presented no other trace of inflammation.

Abdomen.—The stomach, distended with liquids, presented externally in that portion of it which is in contact with the spleen, a livid red tint; internally, it had every where, except in this portion, a greyish white tint; the mucous membrane was of ordinary thickness, and may be readily detached under the form of a membrane. In the splenic portion there existed four or five large red spots, owing to a sanguineous infiltration seated in the submucous cellular tissue, and which had communicated its colour to the membrane itself.

The duodenum, jejunum, and the upper third of the ileum were pale and contained a considerable quantity of yellow bile. But in the lower third of the ileum there existed different species of lesions. From the inner surface of the intestine there projected several patches of a more or less deep red; they were raised one or two lines above the level of the mucous membrane. Their form was irregularly oval; the smallest equalled a pea in diameter, and the largest that of a thirty sous piece. They were formed of thickened mucous membrane. In the intervals this membrane was but slightly injected. Several of these presented in some points of their surface ulcerations, the bottom of which was formed of laminated tissue. Others were partly transformed into a yellowish tissue, altogether similar to an eschar in all its physical properties. Others were entirely changed into this same tissue; the colour was not removed by repeated washing; it was necessary to tear it in order to separate it from the subjacent tissues; and it could not be confounded with fæcal matter. In other parts these eschars were partly removed, and thence resulted eschars of a more or less irregular form, the bottom of which consisted of the laminated tissue which had remained healthy. In one or two ulcerations, the eschar, which had been almost detached, was held on only by a very thin pedicle. In fine, other ulcerations no longer presented any trace of them; a large eschar covered the upper surface of the ileo-cæcal valve.

The mucous membrane of the cæcum and of the three portions of the colon presented a considerable number of small rounded superficial ulcers, the edges and bottom of which were white; they seemed progressing towards cicatrisation; the mucous membrane was pale in the intervals between them.

The spleen was very large; the aorta contained a small quantity of black liquid blood; its inner membrane was of a uniform red colour.

In this case the different stages, and the formation of intestinal ulcers may be very clearly traced. We find at one and the same time in the small intestine, 1st, follicular patches simply tumefied; 2ndly, these same patches transformed into a grey, brown, or yellow tissue, resembling eschars; 3rdly, these eschars themselves partly detached; and held down to the subjacent tissues only by their shreds, etc.; 4thly, in their stead, in fine, ulcerations, at the bottom of which cellular tissue exists, healthy or diseased. In the large intestine it is still ulcerations which are met; but no trace of exantheme is found; the ulcerations themselves have a peculiar appearance: they are white at their edges, as at their bottom. This latter is formed of cellular tissue in a perfectly healthy state; the membrane surrounding them is equally devoid of colour. It is evident that in this large intestine there existed at a period considerably remote from that of death, a morbid process which became less and less active, and that the ulcerations discovered there tended to cicatrise. Remark also that the profuse diarrhœa which the patient experienced at the commencement, and which followed the emeto-cathartic given at this period, diminished progressively, and that it was but very slight two days before death.

There is another very remarkable circumstance in this case. Let us recollect the mildness of the symptoms presented by the patient on the 28th of August; let us recollect all the symptoms of reaction presented on the day after: to meet these, did not blood-letting seem to be indicated? Yet scarcely sixteen ounces of blood were taken from a vein in the arm, when all at once the tongue became red and dry, the patient fell into a decidedly adynamic state, and one which appeared real, if we are to judge from the aggregate of the phenomena which presented themselves. After the application of blisters to the legs, the prostration increased; it became extreme after more blood was abstracted by leeches, the bites of which bled very profusely. We should also remark as one of the consequences of the general state, the extreme difficulty experienced in endeavouring to arrest the bleeding from some of these bites. Recourse was then had to tonic mixtures, and tonic lavements; no benefit resulted from them.

In this case were the bleedings merely of no use? Were they not directly injurious? One would be inclined to think so, on reflecting with what rapidity, after the bleeding, a very unfavourable state succeeded a combination of symptoms which presented nothing alarming. Shall we admit that, in this individual, who was apparently very strong, the excessive fatigue experienced during the great heats of July had so exhausted the innervation that the sudden abstraction of a certain quantity of blood readily and easily produced an adynamic state? Shall we admit that this state of exhaustion of the innervation, which, at the same time that it showed itself externally by special symptoms, occasioned also the mode of termination of the intestinal affection, produced also the gangrene and ulceration of the follicular patches? Thus let a slight redness develope itself in any point whatever of the skin, it will terminate promptly in resolution, if the patient's strength is still good; on the contrary, it will terminate in gangrene and ulceration, if the patient be in a state of greater or less debility. No doubt, in thus explaining the unfavourable symptoms which manifested themselves in this individual after the bleedings, we merely lay down an hypothesis; but is it not one of the most probable which can be proposed? Has it not in its support a great number of other cases wherein ataxo-adynamic symptoms were also seen to follow so closely on blood-letting, that one might reasonably conclude that these symptoms had been at least favoured in their development by loss of blood, whether too profuse, or ill-timed? Besides, is it not also an hypothesis to admit, in order to account for the phenomena, that immediately after the first blood-letting, the intestinal inflammation was so much aggravated as to change a disease hitherto mild, into a most serious affection? If this exasperation of the symptoms after bleeding had been observed only once, such an explanation might no doubt be adopted; but if blood-letting has been observed to be followed by such phenomena a great many times, would it not be extraordinary to suppose that a means which is usually considered to remove, or at least moderate, inflammation in general, has on the contrary produced an increase of the intestinal inflammation? If this supposition be objected to, and if, on the other hand, it be no less objectionable to think that two phenomena so often seen to succeed each other, presented themselves together only by mere accident, there will now remain but two hypotheses: 1st, it will be admitted that intestinal inflammation is of a nature altogether specific, and that blood-letting does not suit it; but this hypothesis will be soon overturned; for how often have we seen the symptoms of this inflammation moderated after blood-letting? 2ndly, it will be said with us, that blood-letting is injurious in a certain number of cases, where the innervation is in such a state, that every thing which tends to deprive the nervous centres of energy, tends also to destroy life, by producing those different disturbances of innervation which are called ataxic or adynamic symptoms, at the same time that sanguineous congestion is seen to progress towards gangrene or towards ulceration.

In the case which furnished to us these reflections, we shall not lose sight of some remarkable alterations observed principally in cases where, whether primarily or after the absorption of miasms, the innervation has been seriously influenced. Let us consider those ecchymoses of the stomach, those effusions of blood into the pleura, those petechiæ some days before death; does not this also exist in the typhus of Europe, whether by infection or contagion, in the yellow fever, and in scurvy? Is not this also observed in several cases of small pox, in which it is also very difficult to account for the symptoms and for death solely by the lesions discovered on the body after death? Such, for instance, is the following case:—

A girl, fourteen years of age, was attacked with discrete small pox, which went on without any thing particular occurring for the first seven days, dating from the time of the eruption. Then the pustules, full of an opaque white matter, began all at once to become flaccid and depressed. At the same time there was sudden emaciation of the face, the eyes dull; extreme prostration of strength; inextinguishable thirst; appearance of the tongue natural; purging; frequent pulse; skin hot and dry. These symptoms continued during three days; the debility increased, and the patient died.

Post mortem. State of the Skin.—The pustules presented themselves under three different forms. Most of them were entirely empty; the epidermis, which was raised, was thick, and of a brownish-grey colour. Others were filled with a greyish liquid, resembling the fœtid ichor yielded by ill-conditioned ulcers of long standing. Others, in small numbers, presented themselves in the form of large blisters filled with a reddish serum.

The gastric mucous membrane, throughout its entire extent, was of a dirty greyish white colour; it was not softened, but towards the great cul-de-sac there were observed from five to six brownish patches of a rounded form, having, on an average, the diameter of a fifteen sous piece; they were formed of blood effused into the submucous cellular tissue. The mucous membrane itself was not altered.

The small intestine, generally white, presented from place to place some spots similar to those of the stomach.

The cæcum was red through its entire extent, the rest of the large intestine was pale.

Two ounces of reddish serum was found in each of the pleuræ. The right lung presented on its surface a broad ecchymosis. Both lungs were in every other part perfectly healthy.

The brain and its membranes presented no appreciable lesion.

Certainly, in this case, none of the alterations found in the organs could account for the very serious phenomena observed during life, no more than for the patient's death. We see here nothing but an upsetting of all the functions, and a sudden prostration coinciding with the collapsed state of the pustules. Was the pus, which filled them, having been absorbed all at once and carried into the circulation, the cause of the phenomena observed? This question will perhaps not be considered unworthy of examination, if it be recollected that animals, into whose veins pus has been injected, present nearly the same series of phenomena, and also after death the same description of lesion, as has been ascertained from the experiments of MM. Magendie, Gaspard, Dupuy, Leuret, Trousseau, &c.

Case 14.—*Residence at Paris of a recent date; bad diet; distress—Diarrhœa at the commencement; successive development of ataxo-adynamic symptoms—Blood-letting; blisters; diluent ptisans—Ether and musk the two last days only—Death on the 27th day—Gangrene and ulceration of the follicles—Stomach almost healthy—Pneumonia—Blood as it were sanious—Spleen very soft.*

A mason, twenty-one years of age, of a lymphatico-sanguineous temperament, was now residing in Paris for about two months. Since his arrival he experienced considerable distress, and had scanty food. Towards the 10th of June he was attacked with profuse diarrhœa, which during the first days did not prevent him from eating his food and attending to his work. But the purging soon increased (twenty stools in the twenty-four hours); loss of appetite; debility constantly increasing; inability to work; he kept his bed for eight days before entering the hospital; he took no medicine; observed strict diet, and drank eau sucrée. He entered the hospital on the 29th of June. On the 30th we were struck with the air of stupor which he evinced; he complained of intense frontal headach. His intellects were clear, his movements painful. The tongue covered with a whitish coat, was red at the apex, and marked over the remaining part with a number of small bright red points; bad taste in the mouth, thirst; loss of appetite; abdomen free from pain and soft; from fifteen to eighteen watery stools with a yellowish tint had taken place since the day before. Pulse frequent and concentrated, skin hot and dry. A slight cough existed. (Rice water with gum; flaxseed lavement).

In the course of the day it was observed that the patient raved a little. In the night he disturbed the sleep of those near him by his cries. On the morning of the 1st of July we found him in nearly the same state as on the preceding day. The sputa appeared a little viscid. (Bleeding to two palettes; two blisters to the legs.)

The blood taken from the vein combined into a large coagulum without any buffy coat, remarkably soft, and resembling currant jelly. The delirium returned during the night. On the morning of the 2nd his intellects were perfectly good; but he was very much cast down, his eyes were scarcely open, tongue red, and its papillæ prominent, the diarrhœa somewhat abated, the skin remained dry, the patient coughed more than on the preceding days, and the viscidity of the sputa continued (Rice water, flax-seed lavement). The delirium returned during the night.

On the 3rd great despondence evinced in the countenance, livid tint of the face; the patient had considerable difficulty in raising himself a little in order to have percussion and auscultation practised. The viscidity of the sputa was sufficient to make us apprehend the development of pneumonia, though the respiration did not appear at all embarrassed. We heard a little crepitus on the posterior and inferior part of the left side of the chest. Five or six livid spots of a rounded form were scattered over the chest. The patient answered the questions put to him perfectly well. An hour after he quitted the bed on a sudden, and talked very incoherently. Two more blisters were applied to the thighs. The remainder of the day he raved.

On the 4th the air of stupor was carried to an extreme degree. The patient appeared quite unconscious of every thing which passed around him. Still he understood questions, and answered them; but when left to himself he raved again. The tongue was dry, similar in colour to that of burned cream; the lips and teeth were covered with thick black crusts; his stools passed under him in bed; the heat of the skin was very acrid; the pulse, which was very frequent, was easily compressed; the spots had disappeared; the patient did not now expectorate. (Barley water acidulated with muriatic acid; fomentations with warm oxycrat to the abdomen and thighs).

On the 5th the eyelids remained half depressed over the globe of the eye; when they were raised the latter was observed to be dull, and devoid of expression; a sort of powder, of a dirty grey colour, covered the cheeks; frequent subsultus tendinum was observed in the two fore-arms, and from time to time slight convulsive movements of the depressor muscles of the left commissure of the lips were noticed. The skin of the trunk and extremities retained its dryness and acrid heat; the skin of the face, on the contrary, was cold and covered with a clammy sweat. The pulse became still weaker. (The same ptisans and fomentations were continued; ethereal mixture with twelve grains of musk; camphorated lavement.) The patient remained in nearly the same state during the day. Sometimes he appeared in a state of profound coma, sometimes he opened his eyes and sighed very deeply; he passed his stools several times under him; he complained continually during the night.

At the visit of the 6th, his state was nearly the same as on the day before. He appeared to hear the questions addressed to him; he put out his tongue easily enough, but he said not a word. The subsultus was now become more frequent. The pulse was more than 120; the tongue was dry as a bit of parchment. A lumbricus was passed. The inspiration was high and hurried. (The same prescription.)

On the 7th, the patient was dying. We were particularly struck with the great frequency of the inspirations. He died some hours after the visit.

Post mortem, eighteen hours after death.

Cranium.—The veins under the arachnoid of the convexity of the hemispheres were gorged with blood. The former appeared considerably injected. The cerebral substance was dotted with a great quantity of small red points. The ventricles were entirely empty of serum; a little was found between the cerebellum and its tentorium.

Thorax.—The lower lobe of the left lung presented a brownish colour, and did not crepitate. It bore considerable resemblance to the tissue of certain very soft spleens. Everywhere else the lungs were perfectly healthy, not engorged. The heart contained in its right side some fibrinous clots of but little consistence, and adhering somewhat firmly to the carneæ columnæ of the auricular appendix.

Abdomen.—The stomach was distended with gases. Its inner surface presented several rose-coloured patches, in the interval between which it was white. The mucous membrane, examined in the site of these patches and between them, had everywhere retained its natural thickness and consistence: this state of the stomach might be considered at most as the first stage of slight inflammation.

The duodenum, jejunum, and ileum, contained a great quantity of yellow bile. These intestines, when opened through their entire extent, and washed, presented their inner surface very pale to within about two feet and half above the cæcum. In this latter part there existed a remarkable lesion, which appeared to be of the same kind, and merely presented different degrees. Thus we observed in several places oblong elevations of a brownish red colour, formed at the same time both by the mucous membrane, a little thickened in this part, and more especially by the subjacent engorged laminated tissue (1st stage). In other places these same elevations were surmounted by a yellowish tissue, intimately adherent to the subjacent tissue, and altogether resembling the eschars of external parts. It appeared to us beyond doubt that this tissue was nothing else than the mucous membrane affected with gangrene, whether alone, or together with the cellular tissue lying beneath it (2nd stage). In other parts, the elevations no longer presented the preceding yellowish tissue, except in isolated points, and in the intervals of this tissue there was seen a tissue of a deep brownish red colour. In this latter case the gangrened portion was already partly detached; thence resulted an ulcer, the bottom of which was formed by the laminated tissue, thickened and inflamed (3rd stage). In other places there was observed only mere ulcerations, without any mixture of yellowish tissue, with red edges formed by the mucous membrane, with a brownish bottom formed by the laminated tissue (4th stage).

All these ulcerations formed a considerable prominence above the mucous membrane. This was white, or slightly injected in the intervals.

The mucous membrane of the cæcum and of the commencement of the colon presented considerable injection. We also observed, on all the large intestine, several black isolated points, surrounded with a circle of a dull white colour, forming a slight prominence above the rest of the mucous membrane. (Follicles.)

The spleen, of a large size, was extremely soft, and contained a matter having the colour of wine lees.

The other viscera were healthy.

Examination of the blood.—The thoracic descending aorta contained a considerable quantity of blood, the appearance of which seemed very remarkable. It presented itself under the form of a liquid, having the colour of wine lees, as if sanious in some parts, and holding suspended some small blackish globules. With the exception of this circumstance, it presented a great resemblance to the blood which escapes from an abscess opened before maturity. The rest of the arterial system was empty. The blood from the vena cava presented the same appearance.

The circumstances which preceded the development of this disease should not be lost sight of: the patient's recent arrival in Paris, his distress, and bad diet. In the midst of these circumstances a profuse diarrhœa came on; it fatigued and exhausted the patient, who was placed, by causes which previously acted on him, in peculiar conditions of innervation and hematosis, and, from the very first day we saw him, we were struck with the air of stupor on him, the prelude to much more serious symptoms. In this state of things venesection was employed, and the appearance of the blood drawn from the arm was so unusual, that it already announced that the function of hematosis was changed, whether primarily or consecutively, as well as the function of innervation. This bleeding did not at all arrest the progress of the disease; it did not even impede the development of the pneumonia; and the day after it was employed the general debility became much greater. Revulsives were no longer efficacious; and though simple diluent drinks were given, the tongue became more and more dry, in proportion as the other symptoms became worse. The post mortem showed us the same lesions as those observed in the preceding cases.

It is always the digestive tube which we find more especially the seat of lesion, and that lesion is always of the same nature. On the contrary, we discover nothing but considerable congestion in those nervous centres which, during life, had presented such serious functional disturbances, and in which the disease principally seemed to reside.

Let us now direct our attention to some particular circumstances of this disease. We may first remark the delirium: it was first intermittent; then it was separated by lucid intervals of greater or less length; and, finally, it became continued. Up to the last day of his life the patient, though in a state of delirium, understood the questions put to him; and, even when he was no longer able to speak, his actions showed that he still comprehended them. Let us remark also how, in a short space of time, the manifestation of the muscular strength may vary from some modification of the nervous system. On the 3rd of July, the patient, with all his efforts, was unable to raise himself in the bed; an hour after he commenced to rave; he then sat up of himself, and walked several steps in the room.

The skin remained constantly dry. Two days only before death his face was covered with a cold clammy sweat. The trunk and extremities contrasted by the burning heat with the icy coldness of the cheeks. This unequal distribution of heat disappeared the next day.

In this case, as in several of the preceding, the state of the tongue did not indicate the state of the stomach. The lesion which the latter presented consisted merely in a very slight injection, similar to that found on most dead bodies, and yet the tongue was to the end remarkably dry; the lips and teeth presented thick dark crusts. These phenomena appeared also at a period when the patient had as yet taken but simple diluent drinks.

No abdominal pain; no tympanitis announced the serious alteration of the intestine.

The diarrhœa which came on from the commencement of the disease, and which then progressively diminished, was thus caused, at first, by an acute inflammation of the follicles of the large intestine, an inflammation which no longer existed at the time of death, but the former existence of which seemed to be proved by the unusual development of the cæcum and colon. It has often occurred to us to find nothing else but these follicles thus developed in cases of diarrhœa of a more or less ancient standing.

The alteration of the lung had no doubt its share in the production of the different nervous symptoms : viscid sputa, not, however, streaked with blood, were the only symptom which caused us at first to suspect the existence of a pneumonia. The respiration was impeded only towards the termination ; then the dyspnœa became such as to engage our attention very much ; but we should not forget that very often, towards the close of typhoid fevers, the breathing may be considerably accelerated, and the lungs still remain healthy. We have seen the kind of alteration which the lung presented ; it was remarkable for its extreme friability, and for the great quantity of liquid with which it was engorged. The air no longer penetrated the diseased part, and yet there was neither red nor grey hepatisation. It was a peculiar alteration, which it is not uncommon to meet in cases of dothinenterite, with dark incrustations of the mouth, petechiæ, pultaceous softening of the spleen, &c.

What shall we say of these spots, larger than ordinary petechiæ, with which the chest was covered on the 5th of July? They lasted but twenty-four hours, and did not coincide with any appreciable change in the other phenomena of the disease. These spots, designated by authors under the name of *vibices*, are, says Huxham, a certain sign of the presence of malignity. They are often accompanied with profuse hemorrhages, and, according to the system of the old humourists, they were connected with a *morbid state of the blood.*

In the case now before us there was, in fact, a very appreciable alteration of the blood. It was evident in the blood drawn during life ; it was still more so in the dead body. Now, is it in this blood, thus altered, that we must seek for the outset and cause of the different functional or organic disturbances presented by the patient? Let us first remark, that, in most of the individuals who form the subject of the preceding cases, we observed almost the same disorders, whether during life or after death, and that, in several of them, the blood did not seem to us to deviate from its normal state. One might just as well maintain that the alteration of the blood was here consecutive ; that it was, for instance, the result of the absorption of the gangrenous parts of the intestine, but that would be mere hypothesis ; and, besides, it would not account for the alteration presented by the blood drawn from the vein at a period when it could not yet be admitted that the absorption of which we have just spoken was the cause of it. However, whatever may have been the part which the alteration of the blood performed here, this alteration was at all events real, and must have exercised some influence on the symptoms, progress, and termination of the disease ; for it can scarcely be conceived that the different tissues could be nourished and excited by blood thus altered, without themselves experiencing some disturbance.

CASE 15.—*Recent arrival in Paris — At the commencement quotidian remittent fever, with evident signs of gastro-intestinal irritation—subsequently adynamic symptoms, preceded by profuse epistaxis—Bleeding, blisters ; diluent drinks—Death on the twentieth day—Follicles of the ileum, cæcum, and colon, tumefied and ulcerated—Purulent infiltration of the lower lobe of the left lung—Gangrene of the upper lobe of the same lung.*

A water-carrier, twenty-five years of age, who had come to Paris from Savoy within the last three months, of a sanguineous temperament and strong make, was zeized, on the evening of the 17th of January, with shiverings, which continued during the night ; on the day after a feeling of general illness, appetite diminished : returns of the shivering at night ; frequent alvine evacuations, attended with colicky pains ; he was not submitted to any treatment up to the 24th ; he then entered the hospital.

On the 25th (ninth day) countenance flushed, eyes very bright, thirst, loss of appetite; tongue red at the edges and apex, covered with a yellowish coat at the centre; bitter taste in the mouth; abdomen free from pain, and a little swollen; from seven to eight stools in the twenty-four hours; slight cough; pulse full and frequent, skin hot and dry. (Venesection to four palettes; barley-ptisan sweetened; diet.)

On the 26th the blood presented a large clot, covered with a dense and thick buffy coat; fourteen stools; same state in other respects. (Venesection to two palettes.)

On the evening of the 26th a very violent exacerbation of the fever. (Third venesection to the extent of one palette, after which the patient fainted.)

On the 27th slight epistaxis; in the evening violent fever. (Bleeding to two palettes.) The blood presented a small clot, covered with a thin, soft buffy coat.

On the 28th epistaxis; face still flushed, eyes very bright, but still a sinking of the features; answers questions very slowly; same state of the tongue; burning thirst; abdomen a little tympanitic; from thirteen to fourteen stools, with colic; pulse frequent, skin moist. (Emollient ptisans.)

On the 29th profuse epistaxis; great sinking; continual complaints; cough without expectoration; breathing a little hurried; slight dulness and crepitous râle posteriorly on the left, over nearly the entire extent of the lower lobe. (Twenty-four leeches to the left side of the chest; two blisters to the legs.)

30th and 31st, epistaxis, prostration; face pale; same state of the breathing; same result from percussion and auscultation; expectoration catarrhal; diarrhœa also profuse. (Blister to the chest.)

The 1st February, intellects disturbed; epistaxis.

2nd, profuse epistaxis since three in the morning; extreme debility; countenance pale and despondent; tongue white and moist; breathing freer; continuance of the cough, meteorism and diarrhœa; pulse very frequent and weak. (Nasal cavities plugged; rice water with gum.)

On the 3rd, great uneasiness during the night; eyes flushed; talkative; constant moving of the lower jaw; pulse weak, and very frequent; tongue moist and white. (Sinapisms.)

On the 4th, tongue white, but dry, with some black patches; teeth black; pulse 100, and very weak.

On the 5th, extreme prostration; continual groaning; intellects perfect; involuntary discharge of fæces; breathing high and loud; the bladder, which is distended, ascends to the umbilicus; overflowing of the urine; pulse very weak, 140. (Decoction of polygala with gum; blister to the sternum; sinapisms to the thighs.)

He died at eleven o'clock in the morning.

Post mortem. Brain healthy.

Thorax.—Close adhesion of the pleuræ costalis and pulmonalis of the left side; lower lobe of the left lung dense, brownish, and, on making an incision into it, a mixture of blood and pus escaped. In the centre of the upper lobe, which was healthy, we found a cavity capable of containing a large egg. Its surface was areolated, brownish, and contained a sort of pap of a greenish-grey colour, and a gangrenous fetid odour.

Abdomen.—Gastric mucous membrane very white through its entire extent, being also of its ordinary thickness and consistence; remarkable paleness of the mucous membrane of the small intestine in its upper four-fifths. In the lower fifth there were found numerous elevations, the diameter of which varied from three to six lines. They were of a pale rose colour. Some were ulcerated in the centre; over the extent of some fingers' breadth above the valve we found several ulcerations, being about the diameter of a forty sous piece. The mucous membrane forming their edges was red and puffy.

The internal surface of the cæcum and colon was studded with elevations similar to those of the small intestine, but more confluent, and ulcerated for the most part at their centre. The mucous membrane was red to its entire extent, whilst it was white in the small intestine.

The lymphatic ganglions, corresponding to the portions of the diseased intestine were swollen, and their tissue red.

The bladder, distended by urine, extended as far as the umbilicus. Its internal membrane was slightly injected.

Let us try to point out the most striking phenomena of this disease. It attacked a man of a vigorous constitution, who had recently come to Paris. It commenced with shivering, which returned every evening for three consecutive days; purging set in on the third day; the patient remained at rest, without taking any medicine, up to the ninth day. Then the tongue became red, the purging considerable, the abdomen free from pain, pulse feverish; the strength was still retained. On the three following days, 25th, 26th, and 27th January, three bleedings were employed; the blood was buffed in all; still no amendment. 27th, 28th, and 29th, epistaxis each day; countenance begins to be expressive of dejection; on the 29th symptoms of pneumonia; leeches to the chest, blisters to the legs. From the 30th January to 5th February, epistaxis so profuse as to render plugging necessary; from this moment the prostration of strength went on increasing; there was *dryness*, and at the same time *paleness*, of the tongue; purging still continued; meteorism, delirium at intervals; dyspnœa, paralysis of the bladder, debility and extreme frequency of the pulse: death.

To explain these different symptoms we discover nothing in the nervous centres; but we find in the intestine the ordinary disease of the follicles at the double period of exantheme and ulceration. The stomach was free from all lesion, though the tongue had been dry and black. Farther, we find two different alterations in the left lung; inferiorly a pneumonia, which terminated by suppuration; superiorly a cavity, which, existing in the middle of the pulmonary parenchyma, presented all the characters of gangrene of the lung, such as they are described by Laennec, when a cavity results from softening, and from the putrid abscess of the portion of the lung which had become gangrened. This cavity also did not communicate with any bronchus, so that the sputa did not present any peculiar character. But what became of the gangrenous matter? Had it been taken up by absorption, and carried into the torrent of the circulation? At what period did this gangrene form? What relation between it and the other symptoms? Knowing the impossibility of solving these queries with anything like accuracy, we shall merely remark here, that real gangrene of the lung is but very rarely seen in the diseases called typhoid fevers; and, consequently, that whatever is found written in ancient authors on the frequency of gangrene of the lungs in such cases cannot be justified by observation.

In this case, moreover, as in all those which have been previously cited, the pneumonia would have been overlooked, if the chest had not been percussed and auscultated. We cannot, therefore, impress it too strongly on physicians to practise percussion and auscultation as often as possible in the case of patients attacked with typhoid fever. In the majority of cases it is only by having recourse to this double method of investigation that they will be apprised of the existence of those intercurrent pneumonias, so insidious in their invasion, so obscure in their progress and in their symptoms, and so destructive in their results.

It appears to us remarkable, that it was after bleeding employed for three successive days, which was unable to arrest the disease, that those profuse attacks of epistaxis came on, the appearance of which preceded that of the adynamic symptoms. We dwell so much the more readily on this succession of phenomena, as it is not the only time we have observed it. In the winter of 1829, in particular, we saw in five medical students, labouring under slight continued fever, large bleedings, employed in rapid succession, followed by repeated attacks of epistaxis, which were themselves, as it were, the prelude to a most serious ataxic or adynamic state. In two of them, a little time after these attacks of epistaxis came on, we saw several of the leech bites ulcerate. Each ulceration was rounded, and seemed to have been made, as it were, by a shoemaker's nipping tool. These two individuals died. We think, that the more blood we should have taken from these patients, the more we should have increased the tendency of all the irritated parts to ulceration.

Case 16.—*Residence for some years in Paris—Previous watching and fatigue—At first mere lassitude, then slight continued fever, becoming more severe according as the symptoms of pulmonary and gastro-intestinal irritation became well marked—Sudden return of prostration, and death on the thirty-first day in the midst of an apparent state of half-convalescence—Ulcerations in the place normally occupied by the follicles of the ileum—Black colour and softening in the patches of the intestinal mucous membrane—Pneumonia.*

A gilder, seventeen years of age, of a delicate constitution and lymphatic temperament, who had been residing in Paris for some years, devoted himself, for several consecutive days, to excessive labour, which was prolonged for a considerable part of the night. On the 26th of December he had some shivering fits in the evening; his sleep was uneasy and disturbed. On the day after, and the three following days, he employed himself at his ordinary work; but, from time to time, unusual fatigue obliged him to rest. He was then seized with a shivering, followed by heat. On the 3rd of January he kept to his bed. At this period there existed an annoying feeling of heat, thirst, complete loss of appetite, feeling of debility, shivering in the evening, want of sleep, constipation. This state continued for six days. Finding himself worse on the 10th of January, he had a physician brought to him, who prescribed twenty leeches to the anus, and an emollient lavement. These means relieved him a little. On the 12th he entered the hospital.

State on the 13th; feeling of weakness, no headach, face pale; tongue moist, white in the centre, red at the edges and apex; thirst, anorexia, abdomen soft and free from pain, constipation; pulse of moderate frequency; skin hot and dry. In such a state of things, no precise indication presented itself. (Barley ptisan, lavement of marshmallow.)

On the 14th and 15th the patient found himself better. He was less dejected, the skin was becoming moist, pulse was soft; one alvine evacuation had taken place in twenty-four hours. (The same prescription.)

On the 16th the face was flushed; fever more intense. The patient coughed without expectorating; his breathing was a little hurried. The chest, when percussed, yielded a somewhat dull sound on the inferior and posterior part of the left side; there also the crepitous râle was heard. These evident symptoms of pneumonia were combated by the application of fifteen leeches to the left side. (Demulcent drinks.)

On the 17th, the sound was duller on the left; the crepitious râle was less marked, and without any mixture of the natural respiratory murmur. The sputa were transparent, viscid, a little rusty-coloured; the inspirations were short and frequent. The pneumonia appeared to progress towards hepatisation. On the other hand, the state of dejection was increased, the countenance was pale, and expressive of great prostration; the pulse was more frequent and weaker; skin dry, and free from heat · the abdomen tympanitic, always free from pain; tongue continued moist; one alvine evacuation only took place after the administration of an emollient lavement. This general debility, this absence of re-action, seemed to contraindicate the employment of blood-letting. A large blister was applied over the left side of the chest The action of the skin was solicited by ten grains of Dover's powder. (Camomile lavement.)

On the 18th, worse in every respect. The total absence of respiration on the left side, and at the same time the disappearance of the crepitous râle announced hepatisation of the lower lobe of the lung; the expectoration was suppressed; the difficulty of breathing had increased; a moderate purging had succeeded the constipation of the preceding days (five serous stools). The leaden tint of the face announced the progress of the prostration. (Sinapisms to the feet.)

Nothing new on the 19th; application of a blister to one thigh.

On the 20th, the breathing was more free, the expectoration was re-established; but the tongue was found dry for the first time; there was considerable meteorism; the diarrhœa continued. Thus the improvement which occurred, with respect to the chest, appeared to be at the expense of the abdominal viscera.

On the 21st and 22nd, delirium from time to time; same state in other respects. (Emollient ptisans.)

On the 23rd, there was a perceptible amendment; nothing seemed to indicate it on the preceding day; no critical phenomenon accounted for it; the skin in particular retained its dryness. Intelligence clear; tongue moist; meteorism diminished, as also the purging. On the part of the chest the improvement was not less marked; the breathing was free, cough infrequent, expectoration catarrhal. Still the dull sound and the absence of the respiration continued. Thus the pneumonia was far from being resolved: but it passed into the chronic state. The pulse remained frequent and weak. To support the strength without producing irritation of any organ, such appeared to be the indication to fulfil. Aromatic frictions were made on the extremities several times in the day. The blister to the thigh was dry; that of the chest was still kept up. Internally barley-ptisan with gum, rice-water, &c., were given. From the 24th to the 28th, the state of the patient became more and more improved. On the 27th there was no longer any symptom with respect to the digestive passages, except a very slight diarrhœa. (Two liquid stools in twenty-four hours.) The strength was increased: the countenance assumed an excellent appearance: the dulness of sound and absence of respiration were the only signs, which indicated that the pneumonia was not resolved; on it alone seemed to depend the continuance of a slight frequency of the pulse, without heat of skin; but every thing seemed to promise that time aided by proper care would gradually effect the resolution of this latent inflammation.

What was our astonishment when, on the morning of the 28th, we found the patient in a worse state than he had ever been! Face cadaverous; continual groaning; half-coma; no answers to questions; pulse very frequent and thready. Numerous alvine evacuations had taken place during the night. We were unable to attribute this relapse to any cause, which was as sudden and as unexpected as the improvement of the 23rd had been.

The patient died a few hours after the visit, on the 31st day from the commencement of the continued fever, and on the 12th day of the pneumonia.

Post mortem thirty-two hours after death. Total absence of fat under the skin and around the organs where it is ordinarily accumulated.

Cranium.—Brain perceptibly more consistent than usual; ventricles containing about a large spoonful of limpid serum.

Thorax.—The lower lobe of the left lung, to about three-fourths of its extent, the base of the right lung to about three fingers' breadth in depth, presented, on being cut into, a uniform red tissue, whence a sanious liquid flowed. This tissue, which was easily torn, did not crepitate, nor did it float on water. The lungs, for the remainder of their extent were very healthy.

Abdomen.—The stomach was distended with gases. Its inner surface was white, except in some isolated points where there existed some redness in the form of lines or small patches. These different parts, when put together, equalled about the diameter of a forty sous piece. Their colour resided in the mucous membrane, which there was a little softened.

The upper three-fourths of the small intestine, filled with a yellow and viscid liquid, were remarkably white. At the commencement of the lower fourth, we observed some black patches seated in the mucous membrane, which was thickened and softened. In the centre of some we perceived a slight solution of continuity of the mucous membrane. In others, this solution of continuity was more deep-seated, and more extensive ; its bottom was formed of laminated tissue, which had retained its whiteness. According as we approached the termination of this small intestine, these patches and these ulcerations became more confluent. Immediately above the ileo-cæcal valve, and in the cæcum, there was observed another kind of ulcerations ; their edges were red and puffed ; the muscular tunic constituted their bottom. In the interval between these different lesions the mucous membrane was white. The three portions of the colon, whose inner surface was white, were distended with gases. The sigmoid flexure was contracted. The mucous membrane presented red folds. The mesenteric ganglions, which corresponded to the lower third of the small intestine, were red and swollen.

The subject of this case differs from several of the preceding in this, that he was for a long time residing in Paris, when his health began to fail. The commencement of the disease is worthy of remark ; when we reflect on the nature of the symptoms which this individual experienced at first, does it not seem that we should refer them principally to an exhaustion of the innervation, produced by watching, and by the painful employments in which he was engaged ? These are the very symptoms which we perceive supervene in other individuals, whether after strong mental emotions, or after great intellectual fatigue, or after venereal excesses, etc. Shall we then say, that in these cases, there is at first this *general affection ?* What can be less appropriate under the present circumstance than such an expression, and what affection is better localised than that which consists in a primary derangement of the nervous centres ?

However, in our patient, as in most of those who, by some one of the causes just now stated, exhaust their store of innervation very excessively, a period soon arrived, when several organs became the seat of irritation ; in this case it was principally the respiratory and digestive apparatuses. A congestion in these organs being once produced, it must be foreseen that it would not be readily resolved, and that there would be a tendency to other terminations ; it must also be apprehended that it would produce nervous symptoms more or less serious ; as is commonly observed in an individual placed under circumstances similar to those to which our patient had been subjected.

No alarming symptom at first accompanied the double congestion, of which the pulmonary and gastro-intestinal mucous membranes were almost simultaneously the seat ; however, the irritation of the pulmonary mucous membrane extended to the last bronchial ramifications, reached the pulmonary vesicles, and scarcely had auscultation detected a pneumonia, when the patient was observed to fall into still greater prostration. There is no doubt but this pneumonia contributed very much to produce the adynamic state ; this is what happens in many old persons who are observed to become *adynamic* very rapidly, when attacked with pneumonia. However, the digestive passages had also their share in the production of this adynamic state, as was proved by the meteorism and diarrhœa which set in.

Thus there are three stages in this disease : in the first, the derangement of the health results from prolonged fatigue of innervation, every thing observed may be explained by this fatigue, and nothing proves that there was any thing else in question.

In the second stage, the respiratory and digestive passages become affected; out the disease did not as yet present any thing formidable.

In the third stage, the two-fold affection of the pulmonary and gastro-intestinal mucous membrane became more serious, and this increase of severity was announced by an adynamic state.

This third stage was soon succeeded by another, in which the disease again changed its aspect. Of the local signs of the intestinal affection there now remained not one, except a very slight diarrhœa; of the signs of the pneumonia there remained none but those afforded by auscultation and percussion: lastly, of the general symptoms there remained merely a very slight febrile disturbance; but the strength returned and all the phenomena of adynamia disappeared.

This fourth stage seemed such as should bring the patient to a perfect convalescence; one might hope for the complete, though slow, resolution of the pulmonary and intestinal inflammation, when all at once the scene changes: without any known case the diarrhœa suddenly returns very profusely; at the same time the prostration of strength all at once becomes extreme, and the patient dies, presenting a group of symptoms very much resembling those of cholera.

The post mortem examination showed in the intestine lesions which certainly existed there before the appearance of the latter symptoms. These lesions were still very intense; they were much more considerable than those presented by other individuals who had died with ataxic or adynamic symptoms. These symptoms had also existed in our patient; but they had disappeared, though the intestinal lesion was still very intense, as the dyspnœa had disappeared in him, though at the time of death a considerable portion of the pulmonary parenchyma was still hepatised. We may remark the state of the ulcerations of the cæcum, the edges of which were still very red, and which were so deep-seated that their bottom was formed by the muscular tunic divested of the cellular layer which ordinarily covers it.

With respect to the symptoms of the fifth stage, how are we to account for them? Did they result from a return of the inflammation of the ulcerations of the cæcum, or from a return of a profuse diarrhœa, breaking up of the strength, and death?

Be that as it may, on seeing this individual recover his strength and progress towards convalescence, who could have supposed that there were still such serious lesions in the intestine? Who could have supposed that he could still respire only by means of a part of his lung? From the aggregate of the symptoms, whether local, or general, who would not have formed a favourable prognosis with respect to the termination of the disease up to the morning of the 28th of December?

This patient was not bled. All the treatment was confined to blisters applied to the extremities and chest, to sinapisms, to simple emollient drinks, to which were added. on one occasion, ten grains of Dover's powder, which produced no perspiration. It was on the day in which this powder was administered that the diarrhœa appeared for the first time.

CASE 17.—*Recent arrival at Paris—Great fatigue and watching.—At the time of entering the hospital symptoms of pneumonia without expectoration; at a later period ataxo-adynamic symptoms—Blood very serous—Antiphlogistic treatment at first, then tonic—Death on the 34th day—Intestinal follicles tumefied and ulcerated; eschars at the bottom of some ulcerations—Remarkable paleness of the ulcerations and elevations; no redness of the remainder of the intestines—Pneumonia—Spleen large and soft.*

A woman, twenty-three years of age, who had arrived at Paris within the last eight months, and lived as a servant, was seized without any known cause, towards the 15th of February, with illness and lassitude; her appetite was diminished; her menses were suppressed ; however, she continued to work up to the 2nd of March. At this time some cough and a pain in the right side appeared. She was bled in the arm, and the day after the bleeding sixteen leeches were applied to the side affected. The state of the patient was not improved. She entered the Charité on the 9th of March, and the next day presented the following state :—

Lies on her back ; countenance pale, with some appearance of dejection ; tongue white ; anorexia ; abdomen slightly tumefied, soft, painful on pressure in the right flank ; two or three stools ; cough without expectoration ; wandering pains in the chest ; on percussing we discovered a dull sound laterally, on the right and left below the mamma ; respiration not heard on the right ; some râle on the left side ; pulse frequent and hard ; skin hot and dry. (She was bled to the amount of three palettes ; two blisters to the legs in the afternoon ; mucilaginous drinks.)

The colour of the blood less deep than usual ; it gave to the linen cloth a very clear red tint, as if the colouring matter were diluted with a considerable quantity of water. Being almost entirely constituted of serum, it presented but a very thin coagulum, about the size of a five franc piece, and without a buffy coat.

On the 11th, delirium during the night ; pulse weaker ; respiration not frequent ; the other symptoms underwent no change. It appeared to us that the dull sound detected on the right side depended on the liver. (Twelve leeches to the left side ; two sinapisms.)

On the 12th, prostration more marked ; air of stupor ; tongue white, but smooth and evincing a tendency to become dry ; great thirst ; abdomen free from pain, and tympanitic ; diarrhœa more profuse than on the preceding days ; cough with slight catarrhal expectoration ; respiration hurried ; pulse frequent and weak ; skin constantly hot and dry. (Mucilaginous mixture, with two grains of Kermes, Dover's powder ; embrocations to the abdomen with oil of camomile ; fomentations with infusion of camomile ; six leeches behind each ear ; two blisters to the thighs.)

On the 13th, vomiting after taking a dose of Dover's powder ; mild delirium during the night ; tongue dry and white ; increase of the meteorism : constant and involuntary movement of the thumb of the left hand. Same state in other respects. (Fomentations and embrocations as on the preceding days ; lavement of camomile with five drops of essential oil of aniseed and twelve grains of camphor ; twelve leeches over the left side of the chest, four over each jugular vein.)

On the 14th, prostration still greater ; tongue white, and at the same time dry and encrusted ; continuance of the meteorism and diarrhœa ; cough less ; deep sighs from time to time ; pulse very frequent, weak and tremulous. (Watery infusion of quinquina, acidulated with sulphuric acid, sweetened with syrup, mineral lemonade, some wine.)

On the 15th night calm without delirium ; respiration higher and loud ; pulse more resisting ; commencing eschar in the sacrum about the breadth of the palm of the hand. (Large blister over the left side of the chest, which still remains dull.)

On the 16th, same state. (Frictions with camphorated alcohol.)

On the 17th and 18th, the tongue, lips, and teeth, were black and encrusted ; abdomen very tympanitic ; diarrhœa moderated ; pulse very frequent and very weak. There was added to the prescription of the preceding days a potion made of six ounces of quinquina and one ounce of syrup of quinquina.

On the 19th, the patient no longer recognises the persons around her ; mild delirium ; countenance very pale ; tongue covered with black crusts ; pale beneath them and in the intervals between them ; tympanitic state increasing ; four or five involuntary stools within the last twenty-four hours. (Same prescription.)

On the 20th. eyes dull, almost extinct; sweat on the face; respiration loud; pulse scarcely perceptible. She died at eleven o'clock in morning.

Post mortem twenty-two hours after death. No emaciation.

Cranium.—The membranes and substance of brain not injected; brain has its ordinary consistence; a little limpid serum at the base of the cranium and in the spinal canal.

Thorax.—Its vertical diameter very much diminished on the right by the liver, which ascends as high as the fourth rib. The lung of this side presents but slight engorgement posteriorly. The lower lobe of the left lung, on the contrary, is compact, hard, impervious to air, in the state of red hepatisation. In the interlobular fissure of the lung of this side we found a recent false membrane of about a line in thickness. The heart, colourless and flaccid, was proportioned to the size of the subject. Its right cavities contained a coagulum divested of colouring matter.

Abdomen.—The stomach was moderately distended with gases and liquids. Its inner surface presented two distinct colours; the splenic portion of a rose colour. This colour resided in the mucous membrane which was a little puffed; the rest of the stomach was white.

The inner surface of the small and large intestine remarkable white. In the lower-fourth of the small intestine some rounded ulcerations were found, of about the diameter of a lentil, whose white edges, when cut perpendicularly, were formed of mucous membrane slightly swollen, and the bottom of which, also very white, exposed the fibres of the muscular layer. To the extent of half a foot above the valve, these ulcerations became confluent, broader and more irregular. The bottom and edges presented the same arrangement. The bottom of some was covered by a soft layer, of a yellowish grey colour, firmly adhering (eschar of the mucous membrane.) Between these ulcerations were observed two or three elevations, of the size of a lentil, and white as the rest of the mucous membrane, at the expense of which they were formed. The mesenteric ganglions corresponding to the ulcerations were red and tumefied; the spleen was soft and large.

Residence in Paris for a little time; prolonged fatigue and watching; state of languor and general illness preceding the invasion of the disease, by forming as it were the prodrome, and being referrible, as in the preceding case, to an exhaustion of the innervation; presently after symptoms of pulmonary inflammation, which seemed to yield to two bleedings, one local, and the other general; at the time of the patient's admission to the hospital, and on the following days, a remarkable air of stupor, insensibility physical and moral; delirium at intervals; rapid increase of prostration; dryness and at the same time paleness of the tongue; involuntary stools; frequency and extreme smallness of the pulse; permanent delirium and carphology towards the termination; such were the principal phenomena observed in this patient. At the commencement, the antiphlogistic treatment was employed; subsequently, a treatment extremely tonic and stimulant. At the post mortem, the same lesions as in all the preceding cases; only there was here a remarkable circumstance: namely, the total absence of redness or any other unusual colour, either in the ulcerations, or around them.

Shall we connect with this remarkable absence of colour of the intestinal mucous membrane, the no less remarkable paleness which the tongue presented during life? It was not red when it became dry, and at a later period when it was covered with thick black crusts, it still presented great paleness in the intervals between these crusts.

The nature of the blood drawn from the vein is worthy of remark. We have seen that it was almost entirely formed of very clear serum. What an immense difference between this serous blood, almost without fibrine and colouring matter, and that which forms in the vessel in which a large dense clot is received which is often covered by a buffy coat of greater or less thickness. Yet there was here extensive inflammation of the lung. Thus blood of a peculiar nature, very poor in nutritive and stimulating materials, circulated in the veins of this woman. Did not this blood thus modified perform its part in the production of several symptoms? Could it not explain to us the state of the individual's strength? Could it not assist us in foreseeing the nature, form, and danger of the phenomena which were developed in consequence of the double affection of the intestine and the lungs? Must it not, in a word, have influenced in some measure the mode of treatment? On seeing the blood so different from itself, whether in different diseases, or in one and the same disease, attacking individuals placed, by their temperament, their age, and their mode of living, in dissimilar circumstances, how can we refuse to admit that the explanation of the fundamental or accidental symptoms of every disease should be looked for in the blood as well as in the solids? If the ancients often saw, in the diseases which they called malignant or putrid fevers, a blood similar to that which came from the vein of the woman who forms the subject of this case, they were right in saying, that in these diseases there is a state of dissolution of the blood [*]. But they were wrong if they expressed this assertion generally; if they contended to lay it down that this solution of the blood is a necessary element and one that is indispensable in the production of these fevers; for in many of our cases the blood was far from presenting such a character. Thus, in scurvy, the blood has been frequently seen completely destitute of the property of coagulating; and very often also it has been found, in this disease, as well coagulated as in any other affection.

The pneumonia was announced here by symptoms less marked than in the preceding case. The expectoration was constantly that of mere catarrh, the breathing appeared really embarrassed only during the last forty-eight hours: the acute pain which the patient felt at first in the right side of the chest, the dulness of the chest over a great portion of this side, owing to the great enlargement of the liver, might have led one into error with respect to the seat of the pulmonary inflammation.

As in most of the other cases, the brain presented no appreciable lesion, though the patient had considerable delirium. The functions of organs then may be injured without these organs themselves presenting in their texture any perceptible alteration. It also appears very difficult for us to declare precisely in what state the brain shall be found in individuals, who, during the course of typhoid fevers, have had delirium and other nervous symptoms. Accordingly, in several individuals who presented these symptoms, we found in some, (and that is not the smallest number,) the brain and its envelopes perfectly healthy; in others the cerebral substance appears in general more consistent; in a third, it is injected, and studded with an immense number of red points, which are the orifices of so many small vessels; in a fourth, albuminous concretions exist in the sub-arachnoid cellular tissue of the upper surface of the brain, or of its base; in a fifth, the ventricles are filled with a more or less considerable quantity of limpid serum. On the other hand, how often have we seen the ventricles contain, at least, an equal quantity of serum, in persons who had died without ever presenting the least disturbance in their intellectual, sensorial, and locomotive faculties!

---

[*] *In febribus petechialibus, sanguis valde fluidus, serosus ac solutus est* (Hoffman, *Medic* . . . . . edit. in quarto, part iv, sect. i, chap. 10.)—*In acutis et continuis febribus, sanguis fluidissimus comparet, plane non in coagulum concrescens.* (Ibid. chap. 10). Grant has also observed a similar state of the blood in persons attacked with petechial fevers. (See his work on Fevers.)

Case 18.—*Epistaxis at the commencement—Ataxo-adynamic symptoms from the first days of the disease; diarrhœa during its entire course—Leeches; blisters; stimulating antispasmodics (assafœtida, musk, etc.)—Death on the 13th day—Ulcerations of the small intestine—Healthy state of the large intestine—Effusion of blood into the tunics of the stomach, into the muscles of the abdominal parietes, into the pleuræ and pericardium.*

A girl, seventeen years old, was attacked on the 14th of July with a profuse epistaxis, which re-appeared on the following days. At the same time there was diarrhœa and general illness. (Leeches were applied to the right iliac region.)

On the 19th, face pale; the patient looks as it were astounded; answers to questions are painful and uncertain; tongue red and dry at its apex; abdomen free from pain and soft; continuance of the purging; pulse weak, not frequent; skin not hot; profuse epistaxis on this night. (Barley-water; linseed lavement.)

On the 20th, deglutition difficult; stupor increased. (Two blisters to the legs.)

On the 21st, the patient lay with slight retroversion of the head; her eyes, which were closed, opened when she was spoken to, but were not fixed on any object; she did not answer, though she seemed to hear and to comprehend. She was continually uncovering herself, complaining, and uttering, occasionally, piercing cries; her countenance then put on the expression of the most acute pain; the chest was frequently raised, and the shoulders were thrown back by a sudden movement. The two jaws firmly closed the one against the other, as at the commencement of tetanus, prevented the tongue from being seen. All the drinks which we tried to introduce into her mouth were thrown up convulsively. Three or four liquid stools; pulse small, scarcely frequent; skin cool. (Two lavements of linseed meal, with twenty grains of assafœtida in each, and ten grains of musk.)

On the 22nd, profuse bleeding from the gums; in other respects no perceptible change. (Four demi-lavements of camomile, with a scruple of assafœtida, and ten grains of musk in each; two blisters to the thighs.)

On the 23rd, perceptible improvement; countenance more natural; answers questions stammeringly; attempts in vain to show the tongue, which is smooth and dry. (Two more blisters beneath those applied the preceding day; in other respects the same prescription.)

On the 24th, appearance of the face more natural; the patient understood all the questions very well; she sometimes answered them by signs, sometimes by indistinct words. The tongue was dry and brownish; the gums bled; deglutition well performed; the patient complained of a burning heat all along the pharynx and œsophagus; pulse not frequent; skin not hot. (The same lavement, acidulated wash.)

On the 25th, the patient seemed to have only the intellects of a child seven years old, and expressed herself so; the lower jaw was agitated by a tremor similar to that which occurs in the shivering fit of fever; the temperature of the skin was raised, and the pulse had acquired some frequency.

On the 26th, the state of excitement of the preceding days was succeeded by considerable prostration; the lips and tongue were covered with black incrustations; four involuntary liquid stools had taken place; the breathing was hurried, for the first time the pulse retained its frequency. (Barley ptisan with gum; mixture, with eight grains of musk; gargle of mel rosarum and muriatic acid.)

In the course of the day the breathing became more and more embarrassed, and the patient died, as it were in a state of asphyxia, at five o'clock in the evening.

Post mortem. Effusion of a very deep red liquid into the spinal canal.

Copious effusion of red liquid into the pericardium and two pleuræ, which presented no trace of inflammation. Lungs were engorged and crepitated.

Large ecchymosis between the fibres of the muscles of the right side, a little above the pubis.

The stomach distended with gases was generally injected on its inner surface. Along its great curvature, and over its posterior paries, there were several patches of a brownish red colour, owing to a sanguineous infiltration of the submucous cellular tissue. The small intestine was white as far as about two feet above the cæcum; in this last situation, when touched at first externally, it was hard, studded, and considerably thickened in several points: these latter corresponded to so many ulcerations, the greyish bottom of which was formed of the laminated tissue considerably thickened. At the distance of four or five inches above the valve, there was observed but one ulceration, and that of great size.

If we had found in all the dead bodies of the preceding patients morbid appearances as serious as those presented by the small intestine of this young girl, we might have easily established the relation between the lesions discovered by the autopsy and the symptoms observed during life. The ulcerations were here remarkable both for their extent and for their depth; there was no trace of tne exantheme which had preceded them, and yet the disease had commenced but thirteen days before. Profuse epistaxis marked its onset; from the commencement the intestinal affection disclosed itself by diarrhœa. A few days after the attack there was already a very well marked air of stupor: every day the nervous symptoms became more striking; the tongue, at first, red, became dry and black; in the midst of these numerous and serious phenomena, we perceived an entire absence of fever; the pulse acquired some frequency, and the temperature of the skin became raised only two days before death. Thus, in this case, the intense inflammation with which the digestive tube was attacked, developed itself and proceeded to ulceration, without any disturbance taking place in the circulation: it is somewhat difficult to believe that such a lesion could form without any pain having ever announced it, and without the abdomen having ever become tympanitic: yet such was the case.

We may remark how great the tendency to hemorrhages was in this individual. The nasal mucous membrane, the tissue of the gums, the spinal arachnoid, the two pleuræ, the serous covering of the pericardium, the sub-mucous cellular tissue of the stomach, the intermuscular cellular tissue of the abdominal parietes, were alternately or simultaneously the seat of profuse sanguineous exhalations.

CASE 19.—*At the commencement slight continued fever—Subsequently ataxo-adynamic symptoms, the appearance of which coincided with epistaxis—Leeches and blisters; quinquina on the last day—Death on the seventeenth day—Ulceration in the ileum and cæcum—Spleen large.*

A man, forty-five years of age, presented for about eleven days symptoms of slight continued fever; he had no purging; he had been treated with simple diluents. On the eleventh day (31st October) he had profuse epistaxis. On this same day his pulse became more frequent, his tongue became red and dry, the abdomen became tympanitic. (Twenty leeches to the anus.)

On the 12th day, the pulse, which was full enough on the preceding days, was remarkably small; the skin was free from heat; the tongue was brown. Thus, notwithstanding the bleeding at the anus, the state of the patient became worse. The most pressing indication seemed to be to recruit the strength. A blister was therefore applied to one of the legs. Its employment was so much the more indicated, as no re-action took place on the skin. The drink administered was barley ptisan, sweetened with honey. The patient raved all the night. On the morning of the 13th, his ideas were not yet clear; numerous petechiæ covered the skin of the neck and abdomen; the constipation continued. (Barley ptisan; mineral lemonade; lavement of camomile.)

On the 14th and 15th days, the state of the patient was worse; he raved almost continually; the features became sharpened; tongue still brown; abdomen tympanitic and free from pain; pulse scarcely felt; skin cold. (The same drinks were continued; the extremities were rubbed with stimulating liniments.)

On the 16th day the prostration was extreme; the patient was aroused with difficulty from the state of stupor, and pronounced, stammeringly, some unintelligible words; the petechiæ were no longer so numerous. (Two cups of the watery infusion of quinquina, one scruple of camphor in a camomile lavement.)

On the 17th day the patient was dying; the tympanitis was very considerable. He died in the night.

Post mortem. Lungs very much engorged; crepitated but little; their tissue was easily torn.

The stomach was distended with gases and liquids; its inner surface was very white, except at the great cul-de-sac, where there existed two small red spots, each being, at most, the size of a five sous piece. These spots belonged to the mucous membrane, which appeared every where else perfectly healthy.

The small intestine, including the duodenum, contained a great quantity of yellow bile, which coloured the valves. Its inner surface, when washed, was very white to about a foot above the ileo-cæcal valve. At this part there were found ulcerations, whose edges were raised and brown, and the bottom of which, being white, was formed of laminated tissue, now thickened. In the first eight inches we counted but five or six, each about the size of a twenty sous piece; between them the mucous membrane was white: in the four last inches these ulcerations were more numerous; the mucous membrane, red in the intervals between them, was entirely destroyed on the upper surface of the valve.

The cæcum was studded with a great number of small ulcers, all equal in size and capable of containing a small lentil. The mucous membrane, which formed the edges, and the laminated tissue which formed the bottom of them, retained their natural thickness. Between them the cæcum presented a red colour, which resided in the mucous membrane.

The remainder of the large intestine, which was filled with softened fæces, was very white. The spleen was very large.

The preceding case presents to us a disease which, mild up to its eleventh day, suddenly assumed a serious character, at the same time that profuse nasal hemorrhage showed itself. The application of leeches did not moderate these symptons, the rapid prostration of strength principally engaged our attention: recourse was had to blistering, but in vain. On the 13th day, some petechiæ appeared, and their existence at a time when the patient had as yet taken but some diluent drinks, belies the assertion ot De Haen, who lays it down as a general principle, that the petechiæ which appear in typhoid fevers, are always the result of the unseasonable employment of emetics and purgatives. The delirium became constant. Still no other tonic was employed but mineral lemonade; an attempt was made to excite the action of the skin by stimulating frictions. Th eadynamic state soon attained the last degree, and the patient dies after having taken quinquina only twenty-four hours before death.

At the post mortem, the brain was found to be intact, though complete delirium had existed; the gastric mucous membrane was healthy, though the tongue had been dry and black, and, as in all the preceding cases, there was serious lesion of the small intestine: nor was there found in the latter any trace of exantheme, but merely ulcerations; there were some also in the cæcum, and yet the patient had never had purging.

We may remark the very great quantity of bile which filled the intestine.. This bile particularly engaged the attention of Stall, and this circumstance would have had great weight with him in determining the nature of the disease and its treatment.

Case 20.—*Ataxo-adynamic symptoms—Daily exacerbations, resembling the accessions of intermittent fever—Parotitis—Varioloid eruption on the epigastrium—Leeches; blisters; wine; quinquina in drinks and in lavement—Death on the 19th day—Ulcerations towards the extremity of the small intestine—Large intestine healthy—Injection of the gastric mucous membrane—Spleen of the ordinary size.*

A carpenter thirty-six years of age, of a very strong constitution, was brought to the Charité, on the 24th of June, in a state of delirium, which prevented us from learning from him the commencement and cause of the disease. Those who brought him stated that he was ill for the last nine days.

June 25th. Lies on his back, cheeks flushed, eyes half-shut, mouth open, lips black and dry, tongue black, dry, cleft; pain in the epigastrium and in the cæcal region on pressure, constipation; pulse weak and very frequent, skin dry and hot; eruption on the abdomen, principally at the epigastrium, of pimples with a red base, the summit of which was surmounted with a large vesicle still transparent in some, opaque and containing real pus in others. The patient complained very much; he comprehended with difficulty the questions put to him: he seemed to have entirely lost the recollection of what was past. (Fifteen leeches to the anus, a blister to one thigh, decoction of barley, mineral lemonade.)

In the course of the day he became completely delirious. On the morning of the 26th, the tongue was more moist; one stool, same state in other respects. (Four leeches on each side of the neck.)

On the 27th, Sweat on the face and upper extremities; no change in other respects. (Barley ptisan; mineral lemonade, decoction of polygala, some wine.)

On the 28th, Very painful swelling of the right parotid gland, tongue black, no stool, abdomen soft, appearing insensible to pressure, the pustules of the epigastrium were all white, and varioloid; the pulse was small and frequent; the patient was in a state of mild, continued delirium. (Same prescription.)

On the 29th, We found the face, neck, and upper extremities, covered with sweat, as on the 27th.

On the 30th, The delirium still continued, the prostration increased, the pulse, very frequent, and extremely small, the skin burning hot; the tongue remained dry and brown, the abdomen was soft, constipation was obstinate; the parotid gland became larger. (A lavement of quinquina was added to the prescription of the preceding days.) At four o'clock in the evening, the eye was extinct, half shut; subsultus tendinum very frequent, carphology, continual muttering.

On the morning of the 1st of July, the face had a more natural expression; the eye less dull, opened from time to time; the patient groaned at intervals; he made an effort to answer questions, but could not articulate; he showed his tongue when asked, with sufficient ease; it was dry, black, and marked with fissures: no stool. Parotid gland larger and harder. (Same prescription.) At two o'clock in the afternoon, face cadaverous, passive dilatation of the buccinators at each expiration, constant muttering, pulse very weak, and too frequent to admit of being counted.

July 2nd. This state of agony continued. (Watery infusion of quinquina, barley, mineral lemonade, two sinapisms.)

We thought that the patient would die in the course of the day; yet what was our astonishment when, on the morning of the 3rd, we found a sensible amendment! in particular the appearance of the face was better; the patient understood questions, but did not answer them; he put out his tongue slowly and with difficulty: it was moist, clammy, but black. The teeth were cleaned, the skin was without heat, the pulse weak; state of the parotid gland the same; a great part of the pustules of the epigastrium dried. (Same prescription.)

At four o'clock in the evening, the face took on again a cadaverous aspect; the patient no longer seemed to hear questions as in the morning; the eyelid was depressed one half over the eye which was nearly extinct: the buccinator muscles were dilated, as on the preceding day.

On the morning of the 3rd of July, another amendment took place; the patient heard, and for the first time was able to articulate some words connectedly; the tongue was moist and clean, the abdomen flat and free from pain; had one stool within the last forty-eight hours. The parotid gland was very large, a great quantity of pus flowed through the ear. (Same prescription.)

At four in the afternoon, the amendment of the morning had disappeared; a state similar to that of the preceding day at the same hour had succeeded it.

The patient died on the 4th, at 7 o'clock in the morning.

Post mortem twenty-five hours after death. Considerable emaciation; muscles blackish; parotid projecting very much on the side of the head and neck. A great quantity of sanious and greyish liquid separated the granulations of the gland. Immediately below the pinna auriculæ a small abscess was found; through which a probe was easily passed as far as the external auditory meatus.

Cranium.—Neither the brain nor its membranes presented any thing remarkable, a little serum was found in the ventricles; the veins entering into the superior longitudinal sinus contained some bubbles of air in considerable quantity, probably the result of decomposition.

Chest.—The laminated tissue of the anterior mediastinum was swelled with gases, which gave it a great resemblance to the external surface of the lungs of reptiles; the pericardium contained a perceptible quantity of yellow serum; heart a little flaccid and empty; lungs healthy; that of the right side adhered to the ribs by old cellular bands; the bronchi of this side were red.

Abdomen.—The stomach was a little contracted on itself in its pyloric portion; the small intestines were of their natural size; the large intestine presented contractions in different points of its extent: the inner surface of the stomach was perfectly white over all its splenic portion; but the pyloric portion was very much injected. The inner surface of the duodenum, as well as that of the upper five-sixths of the small intestine, was lined with mucus mixed with yellow bile. All this portion of the intestine was in other respects very healthy, white and transparent; in some points only there existed a slight injection of the sub-mucous capillary net-work. In the lower sixth of the small intestine, the mucous membrane presented five or six large ulcerations with irregular edges, the bottom of which, being of a reddish colour, was formed of the exposed muscular tunic. Between them the mucous membrane was but slightly injected; the corresponding mesenteric glands were of a brownish red colour and swollen. The large intestine, filled with consistent and yellowish matters, was perfectly white.

The course of this disease well merits our attention. No change took place, whether favourably or unfavourably, for the first few days; and considering the very serious symptoms that existed, it was somewhat remarkable that the disease remained stationary; but then a sort of exacerbation took place every evening, during which a real paroxysm (agonie) was observed. Was it not a sort of malignant remittent fever, and would not the quinquina given *plenis manibus*, as Pigner used to say, before the return of the exacerbation, have prevented it? It was after the fourth exacerbation that the patient died; but it is deserving of notice that death did not supervene till morning, the period when the immediately mortal symptoms of the afternoon used to cease.

It is particularly on the 3rd of July, that a dose of quinquina should have been given with the intent just now stated; for then the tongue presented nearly its natural appearance, and there was very little fever.

The enlargement of the parotid gland must have only aggravated the state of the patient.

Partial sweats appeared unattended by any advantage on the 12th & 14th day.

An eruption similar to that which covered the epigastrium is not a common phenomenon in fever; it seemed to exercise no influence on the progress of the disease.

The delirium could not be accounted for by any lesion of the brain or its membranes.

The stomach itself presented but a slight degree of inflammation; such as is observed in several persons, who have had no ataxic or adynamic symptoms, and probably whose tongue never was either dry or black.

The lesion of the small intestine, always of the same nature as that presented in the other cases, is the only thing remaining to account for all the symptoms.

We may remark, that here also an obstinate constipation coincided with the healthy state of the intestine.

Case 21.—*Stupor and deafness from the very commencement—Natural state of the tongue in the midst of adynamic symptoms—Sudden disappearance of the deafness—Paralysis of the bladder; gangrene of the penis and sacrum—Leeches to the anus; blisters; wine; quinquina; camphor—Death on the 22nd day—Ulcerations at the extremity of the small intestine and cæcum—Brown colour and softening of the gastric mucous membrane—Brain dotted with red points—Pneumonia—Spleen not much enlarged.*

A man, twenty-seven years of age, of delicate constitution, felt, on the 28th of October, general illness, and without any known cause. On the 30th he had deafness and fever, and continued in the same state up to November 2nd. He then entered the Charité, and twenty leeches were applied to the anus on the morning of the 3rd. On the 4th the fever was as intense as on the preceding day; deafness very great; tongue moist and red; abdomen free from pain; stools natural; countenance has an air of great stupor; movements slow and painful. These last symptoms, as also the deafness, announced the commencement of ataxo-adynamic fever. (Skin was rubbed with volatile liniment; a lavement of camomile, with camphor, was prescribed). The state of the patient remained nearly the same from the 3rd to the 6th. (Two blisters were applied to the legs).

On the 9th (the eleventh day of the disease), the deafness disappeared all at once; but in the course of the day the bladder was struck with paralysis; a large tumour, formed by this viscus, filled with urine, arose above the pubis; the patient was sounded.

On the 10th of November the paralysis still continued; the debility was increased. The patient was plunged into a state of stupor, from which it was difficult to rouse him; the tongue retained its moisture, and the pulse its frequency. (Lemonade with wine, lavement with camphorated camomile, friction with volatile liniment and cantharides).

On the 11th, the prepuce, irritated probably by the introduction of the sound, was attacked with gangrene; the skin of the sacrum presented a brownish red colour; the prostration of the strength was increased; the patient answered questions stammeringly; tongue dry and brown; pulse very weak. (Two glasses of aqueous infusion of quinquina were added to the prescription of the preceding day.)

On the 12th diarrhœa came on.

On the 13th symptoms of pneumonia manifested themselves; respiration frequent, short, and painful; patient coughed very much without expectorating; by percussion we detected a dull sound on the inferior and lateral part of the left side of the chest; the eschar of the penis had extended; the skin of the sacrum was black; the strength became more and more prostrated; the purging continued. (Same prescription, and also a blister to the left side).

From the 14th to the 18th of November, the day on which he died, and which was the twenty-second day of his illness, this person was in a state of continual delirium; the dyspnœa increased; tongue alternately dry and moist, brown and a bright red: the purging continued; the paralysis of the bladder ceased; the eschar of the penis did not extend; the eschar of the sacrum, having been detached, left in its place a large ulcer with a greyish bottom. The patient died in a state of extreme dyspnœa. (The same treatment was continued to the end.)

Post mortem forty-eight hours after death. The brain, which was of the natural consistence, was dotted with a great number of red points. Two tea-spoonsful of limpid serum were found in each of the lateral ventricles. The membranes were a little injected.

The heart was pale and empty. The lower lobe of the left lung, of a brownish red colour, was no longer pervious to air. Its tissue, being very soft, was torn like that of the spleen. The upper lobe of this lung, and the entire of the right lung, were engorged with an enormous quantity of bloody serum.

The stomach was distended with gases. The mucous membrane, in the great cul-de-sac, presented a brownish colour, and was very soft. The mucous cryptæ of the duodenum were very much enlarged. The small intestine contained a great quantity of yellow bile. Slight submucous injection was seen in it; the mucous membrane itself was intact. But at the distance of about half a foot above the cæcum, the inner surface of the intestine presented at first some isolated brown spots: lower down it was uniformly brownish. This colour resided in the thickened and softened mucous membrane. In this same space five small ulcerations were found the size of a five sous piece, the bottom of which, being whitish, was formed by the laminated tissue, which was scarcely thickened. The inner surface of the cæcum, and of the entire colon, presented a slight injection of the mucous membrane and of the subjacent laminated tissue. Not far from the cæcal valve we observed a small isolated ulceration similar to that of the small intestine. The mesenteric glands were brown and tumefied.

Spleen not very large. The gangrene of the penis occupied only the prepuce. On the sacrum the skin was destroyed, in height, from the coccyx to the level of the first lumbar vertebræ; and in breadth, over the entire extent of the transverse diameter of the sacrum. This bone was very much exposed. At the bottom of this large ulcer we observed a black detritus, whence an infectious odour was given off; all around the skin was detached to the extent at least of three or four inches.

Here it is only from the site of the ulcerations that we can suppose that they had been preceded by an exanthematous engorgement of the follicles; they were small, and no longer retained the form of Peyer's patches, but the mucous membrane surrounding them was more altered than in the greater number of the preceding cases. The same may be said of the mucous membrane of a part of the stomach. The injection of the brain was here proportioned to the intense delirium which existed towards the latter period; but in how many cases have we not found a similar state of delirium without finding in the brain any trace of sanguineous congestion?

In this patient there were many other causes of disease and death. The extensive ulcer of the sacrum, the hepatisation of a great part of the left lung, the gangrenous inflammation of the prepuce, were so many circumstances which must considerably increase the danger of the intestinal affection. Is it not also a remarkable circumstance, that the slight irritation occasioned by the introduction of the sound into the bladder was sufficient, in this case, rapidly to produce gangrene of a part of the penis? Lying on the back, also, and that not for a very long time, sufficed to produce gangrene of the skin of the sacrum, and to cause an extensive ulcer to succeed the falling of the eschar. Undoubtedly, such gangrenes cannot be accounted for by the intensity of the local irritation; they suppose a disposition altogether peculiar, similar to that which, in consequence of the slightest local lesion, occasions, in certain individuals, a sudden prostration, and all the phenomena indicative of this prostration. Is it not a similar disposition which is produced in us, when certain poisons, called septic, are introduced into the torrent of the circulation? The carbuncles (charbons) developed in this last case become, as it were, the anatomical character of the disease; but it is very evident that, far from causing it, they are themselves but an effect.

The nervous symptoms appeared here almost from the very commencement of the disease. The deafness, in particular, showed itself very early; it was one of the first phenomena which could indicate the development of a severe disease. After having lasted for four days, this deafness disappeared all at once, and at the same time the bladder became paralysed; at the same time, also, the parts of the skin which had been irritated began to become gangrenous. It was in the midst of these phenomena, which seem to indicate a depression of the strength, that the signs of pulmonary inflammation appeared. Why, in such a state, did the tongue, by a sort of exception to the law which we were entitled to deduce from the preceding facts, remain almost constantly in a condition nearly natural? To meet all these symptoms, was an antiphlogistic treatment indicated? I do not think it; for we even see that the leeches applied to the anus were not followed by any beneficial result: we shall not say that they caused the prostration; but we shall only remark, that the day after their application the deafness had increased as well as the stupor and difficulty of moving: the loss of blood then had not at least any favourable influence. There was no epistaxis in this case, as in several of the preceding cases. Neither do we see that the cutaneous revulsives were of any benefit.

Case 22.—*Diarrhœa at first; subsequently fever, dryness and redness of the tongue; intermittent delirium; coma—Blisters; diluent drinks; quinquina on the last day—Death on the thirtieth day; ulceration at the extremity of the small intestine; stomach healthy; pneumonia; spleen large.*

A mason, sixteen years old, of delicate health, had been affected with purging for about three weeks, when he entered the hospital (September 4th). He had been confined to his bed for several days. He observed strict regimen, and drank barley water. We found him in the following state:—

Countenance somewhat cast down; listlessness; answers slow; tongue white, a little dry and red at the apex; anorexia, moderate thirst; mouth clammy; abdomen free from pain, but distended with gas; several liquid stools in the twenty-four hours, pulse frequent, and of ordinary strength; skin hot (rice water with syrup; emollient lavement; broth). The patient went to stool several times. He raved during the night.

On the morning of the 6th, the tongue was red and a little dry, great thirst, abdomen always free from pain, and distended with gas; same state of the pulse and skin. The delirium re-appeared at night.

7th, the same state. (Two blisters to the thighs.) They prevented not the delirium from being very violent in the night; five liquid very copious stools.

8th, drowsiness, but intellects perfect; emaciation of the face, features very much altered; continuance of the purging, pulse small, more frequent; skin not hot. (Blister over the abdomen; drinks and emollient lavements; a little broth). In the evening and all the night the patient still raved.

9th, the eyes constantly closed; the patient, however, opened them when he was spoken to. His answers were slow and uncertain; features still more altered. Tongue dry, of a bright red colour at its apex; pulse small, moderately frequent; skin not hot; the surface of the abdomen to which the blister had been applied of a pale colour. (Decoction of rice; the following mixture:—

Infusion of orange leaves . . .	four ounces.
Mint water	one ounce.

Diascordium	one drachm (gros).
Soft extract of kina	half a drachm (gros).
Syrup of violet	one ounce.)

The delirium returned in the night.

10th, face cadaverous; answers slow, but accurate; articulation embarrassed, tongue dry: lips black; purging less; respiration accelerated and attended with sighs; pulse small, skin hotter than the day before; patient still strong enough to sit up; he died at six in the evening.

Post mortem fourteen hours after death.—A considerable quantity of limpid serum at the base of the cranium; none in the ventricles. Nothing else remarkable in the nervous apparatus.

The lower lobe of the left lung in a state of red hepatisation. This same lobe presented posteriorly some blackish spots, a sort of ecchymosis which existed only on the surface of the viscus.

The stomach was white through its entire extent, as well as the two upper thirds of the small intestine. The upper part of the inferior third was injected, and presented here and there patches of a redder colour. Lower down we observed numerous ulcerations with raised and rounded edges. The smallest might have admitted about the head of an ordinary pin, the largest nearly equalled the breadth of a thirty-sous piece; the laminated tissue which formed the bottom of them was considerably thickened, being of a dark red in some, and presenting in others a brownish grey tint, which seemed the result of gangrene. These ulcerations were closer together and more extensive, according as they were observed nearer to the ileo-cæcal valve. The portions of mucous membrane separating them were injected. The inner surface of the cæcum presented a deep livid red tint. The mucous membrane of the colon, through its entire extent, and that of the rectum, were also injected, and presented here and there patches of a redder colour. The spleen was very large and very dense.

Signs of intestinal irritation marked the commencement of this disease; the diarrhœa continued a long time without being accompanied by any serious symptom. The lesion of the digestive passages ultimately re-acted on the rest of the economy, and then the symptoms of typhoid fever appeared. The alteration presented by the intestine after death was similar, in its nature and site, to that which we found in all the preceding cases. In all, this alteration differed only in intensity; and what cannot be too carefully observed is, that it is always the intensity of the alteration which decides the intensity of the symptoms. Here again, as in many other cases, the redness and dryness of the tongue are not explained by the state of the stomach, which was found to be perfectly healthy.

When the patient entered the Charité he appeared to be already in a state of great exhaustion; he became weaker and weaker, and after having presented some delirium at intervals, he fell into a state of coma, in which he died. The examination of the encephalon did not account for these cerebral symptoms.

Whilst, on the part of the nervous system, there had been functional disturbances, without any disturbances, anatomically appreciable, in the organs of innervation; there was, on the contrary, on the part of the respiratory passages, a serious lesion of the organ, without there having been during life any disturbance of its functions; it was only some hours before death that any difficulty of breathing was observed.

The emollient treatment, exclusively followed during the commencement, did not prevent the disease from proceeding, neither were the revulsives of any use; no benefit was derived from the tonics, employed only forty-eight hours before death.

Case 23.—*Diarrhœa at the commencement—Subsequently fever, and adynamic symptoms; delirium combated by leeches to the mastoid processes—Appearance of amendment after tonic treatment; death towards the 30th day by intestinal hemorrhage—Ulcerations of the extremity of the small intestine and cæcum.*

A sawyer, twenty-eight years of age, had profuse diarrhœa for three weeks, when he entered the Charité on the 21st of November. He was then in a state of great debility; the tongue was very dry; intellects somewhat dull; pulse frequent and compressible; skin hot; some petechial spots scattered over the epigastrium; an air of stupor in the face. (Barley ptisan; strict regimen.)

On the following days the prostration increased, the spots became more numerous, the alvine evacuations began to be involuntary; some delirium supervened, which was met by the application of leeches behind the ears. The simple diluents were continued; two blisters were applied to the legs on the 26th. The adynamic state attained an extreme degree on the 30th; face livid; eyes extinct; intelligence impaired; pulse very frequent; skin not hot; tongue very dry; stools involuntary, very copious, and serous. (Two new blisters to the thighs; mixture consisting of five ounces of infusion of orange leaves, a drachm (gros) of dry extract of quinquina, and one ounce of syrup of violet.)

During the first days of December, the strength returned a little; countenance improved. (Same treatment). The patient died unexpectedly on the night of the 9th.

Post mortem. Some injection of the gastric mucous membrane in its splenic portion. Nothing remarkable in the duodenum and the upper third of the small intestine. Large clots of black blood filled the two lower thirds. Above them the mucous membrane, to the extent of a foot above the cæcum, presented merely an intense colouring owing to sanguineous imbibition. Lower down there existed numerous ulcerations close to one another. Immediately below the cæcal valve no trace of blood was found. The cæcum was red, and presented five or six ulcerations. The remainder of the large intestine presented but a slight redness, arranged in numerous patches.

This case resembles the preceding, both in the form of its commencement, (diarrhœa in both cases) and in several of its symptoms, and also in the nature of the changes found in the intestine. It differed from it in the uncommon circumstance which terminated it, at a time when, during the exhibition of tonics, the patient seemed to be improving. No particular lesion accounted for this profuse and sudden hemorrhage; it was not even announced during life by any bloody stools.

We have also seen a similar hemorrhage terminate the lives of three other individuals, who were likewise attacked with typhoid fever, and in whose intestine was found the exantheme above described, either simple, or with ulceration. In these three cases the hemorrhage had been announced by the great quantity of blood, which the patient passed by the anus a few hours before death. We have observed another instance of a similar hemorrhage, in a medical student, who also died, but on whom we were not able to obtain a post mortem. He was affected for several days with continued fever, which, at first apparently mild, was subsequently accompanied with profuse epistaxis, and an alarming state of stupor. In this state he passed for the first time a stool consisting of a great quantity of black very fetid blood, as pure as that which would have been obtained from a vein with the lancet. The following days he had several similar stools. After these evacuations he fell into a state of prostration, which went on increasing, and in the midst of which he died.

Instead of being exhaled by the mucous membrane of the small or large intestine, as in the subject of this case, the blood is furnished in others by the gastric mucous membrane, and we have then seen individuals, affected with typhoid fevers, vomit a black matter, like coffee grounds, such as is vomited either in yellow fever, or in certain cancerous affections of the stomach.

CASE 24.—*Pleuritis at the commencement: copious blood-letting—Entrance into the hospital in a state of anemia; tonic treatment; appearance of amendment; then a return of the serious symptoms, and death—Ulcerations at the extremity of the small intestine; injection of the gastric mucous membrane—Blood liquid—Spleen small and dense.*

A man, about twenty-seven years of age, was brought to the hospital on the 1st of December, in the last stage of adynamic prostration: cadaveric paleness of the face and lips; eyes dull, half covered by the eye-lid; pulse very frequent and thready; skin not hot; total abolition of the intellectual faculties; tongue very pale and dry. We ascertained that this patient had, three days before, a stitch in the side; that within the last forty-eight hours he had been thrice bled and that eighty leeches had been applied to him. This person was threatened with sinking very soon into an anemic state; M. Lerminier thought that there was an urgent necessity to raise his strength. (Aqueous infusion of quinquina, aromatic mixture, with the addition of a drachm of ether; camomile lavement, with the addition of a scruple of camphor; two blisters to the legs; aromatic frictions.)

On the next day we found a very perceptible improvement; countenance more natural, less pale; some of his answers sufficiently precise to questions addressed to him; pulse raised; skin moist, and of a gentle heat; tongue white and moist; abdomen free from pain; one stool; some subsultus tendinum. The tonic treatment seemed to succeed; it was continued.

On the 3d his ideas became incoherent; he was continually complaining; yet, in the midst of his delirium, his answers to questions were sufficiently precise; face always very pale, as also the tongue; constipation. (Lavement of quinquina and serpentaria, of each an ounce, and a scruple of camphor.)

On the 4th, intellects clearer; stammering; he seems no longer to have the power of directing the movements of his tongue; pulse always frequent and weak; skin not hot. (The same prescription.)

From the 5th to the 9th, the patient went on slowly improving. Strength a little increased; pulse less frequent; skin kept up a good temperature; the tongue recovered a natural appearance; abdomen soft and free from pain, and the stools, though passed involuntarily, were few in number, and of tolerable consistence. The patient was not delirious, properly speaking, but his intellects were very weak; he spoke and reasoned like a child. The infusion of quinquina, mineral lemonade, aromatic ethereal mixture, frictions to the limbs, lavement of kina, serpentaria and camphor, were continued.

On the 10th, the progressive amendment of the preceding days was gone. The alteration of the features principally announced this alarming change. The tongue which, on the day before, was moist and of a good colour, was dry as a bit of parchment. Temperature of the skin was raised. (Same prescription.)

On the 11th, delirium; extreme frequency of the pulse; it was beyond 140.

On the 12th, countenance cadaverous: extremities cold; no pulse at either arm; same state of the tongue; continual cries and complaints; death at night.

Post mortem sixteen hours after death. Total absence of subcutaneous fat; muscles gluey and livid.

Brain pale, bloodless, as well as its membranes. Two ounces of limpid serum at the base of the cranium.

Albuminous, membraniform flocculi scattered over the pleuræ costalis and pulmonalis of the right side, without the effusion of any liquid. Red hepatisation in several points of the lower lobe of the left lung.

Heart flaccid, devoid of colour, containing a small quantity of liquid black blood as well as the aorta.

Inner surface of the stomach red in the splenic portion. This redness had its seat in the mucous membrane itself, which was very much injected, but still retaining its ordinary thickness and consistence. Large veins, gorged with blood, traversed the laminated tissue.

Inner surface of the duodenum and the remainder of the small intestine slightly covered with bile as far as its lower fifth. In this latter part considerable redness was beginning to appear, at first in isolated patches, then continued to the extent of a foot and a half above the cæcum. These three small superficial ulcerations were observed to exist, each sufficient to hold a centime at most, the bottom of which presented a greyish colour, which was not removed by washing. The cæcum was also very much injected; the remainder of the large intestine was white, and filled with hard matter. The spleen was remarkably small and dense.

The ulcerations of the ileum were here very inconsiderable; around them no follicle was found developed; but there was in different points of the gastro-internal mucous membrane a brighter redness than in other subjects. The membraniform flocculi found in the pleura proved the existence of pleuritis, which seemed to have been the primary disease with this individual. The copious bleedings resorted to one after another to combat this pleuritis, before the patient entered the hospital, might have contributed to throw him into the very marked adynamic state which he presented the first time we saw him: a tonic treatment was tried; it seemed at first to succeed; it was continued, and whilst the patient was taking quinquina, serpentaria, camphor, and ether, the pulse fell, the tongue returned to its natural state, the countenance assumed a better appearance, the abdomen continued soft and free from pain: only there was always great debility. The intelligence was that of a child, and the stools passed involuntarily. All at once this progressive amendment ceases, the tongue again becomes dry, delirium supervenes; pulse becomes very frequent, and, in consequence of this kind of recrudescence, the patient dies. What was the cause of it? The ulcerations of the ileum existed probably before the 10th of December: probably also they were already formed at the time the patient entered the hospital, and it may be admitted that at the time his state improved, the intestinal ulcerations diminished in extent; they were then probably in progress of cure when we examined them. It may be asked whether the gastro-intestinal mucous membrane, irritated by the long continued contact of stimulants, became suddenly the seat of hyperemia on the 10th of December? Is it only from this day we are to date the development of the redness which was found in several points of the stomach and intestines? Did this congestion, having supervened in an individual already much debilitated, occasion the appearance of the serious ataxo-adynamic symptoms of the last few days?

We may again notice, 1st, the bloodless state of the brain and its membranes, coinciding with a certain quantity of serum accumulated at the base of the brain.

2ndly. The liquid state of the blood.

3rdly. The small size and density of the spleen, which, in most of the other cases, we found so large and so soft.

Case 25.—*Recent arrival at Paris—Slight continued fever; subsequently adynamic symptoms; disappearance of the latter; continuance of a slight purging; then cerebral symptoms, and death on the thirty-sixth day—Tonic treatment continued for a long time—Follicular patches of the small intestine more apparent than usual; follicles of the large intestine also more apparent.*

A man, twenty-two years of age, residing in Paris for seven months, with fair skin, brown hair, small muscles, in the habitual enjoyment of good health, felt, on the 8th of May, without any known cause, great lassitude, wandering pains through the limbs, and violent sub-orbital headach. These symptoms continued on the following days. He kept quiet, and observed strict diet. He entered the hospital on the evening of the 13th.

On the 14th, face flushed; eyes sunk; his features altogether presented an air of remarkable stupor. Movements painful; indifference in answering questions; pulse scarcely frequent, full enough, but irregular; skin hot and moist; tongue red; thirst; continuance of the constipation. (Barley ptisan, linseed lavement, diet.)

Same state on the 15th and 16th. A stool each day. Every three pulsations the pulse had a well marked stop.

On the 17th, stupor, and air of prostration were remarkably increased. At the same time there was redness and dryness of the tongue; two liquid stools; increased frequency of the pulse, which lost its irregularity; burning heat of the skin. Inflammation of the digestive mucous membrane more marked than on the preceding days. The great stupor in which the patient lay, contra-indicated the employment of blood-letting, or was this stupor but the effect of the intestinal inflammation? M. Lerminier, after raising these questions, tried the application of thirty leeches to the anus. Their bites flowed profusely. Profuse sweat came on during the night. On the day after, the 18th, there was undoubtedly an improvement; particularly the appearance of the face was more natural; the features not so sunk; the tongue was now moist, and the fever was diminished.

On the 19th the serious symptoms of the 17th re-appeared. The happy effect of the former application of leeches inclined M. Lerminier to try a second; but this time it did not appear to have so favourable a result. To be sure, on the next day, we found the fever moderated, the tongue moist and of a good colour; but the prostration had increased; the speech was a little embarrassed; the tendency to the adynamic state was evident.

On the other hand the symptoms of intestinal irritation seemed but very slight; there was but little frequency of pulse. Two blisters were applied to the legs; two cups of aqueous infusion of quinquina were given.

The two following days the tongue became red and dry. Only one liquid stool occurred every twenty-four hours. The abdomen still retained some softness. The quinquina was succeeded by a decoction of polygala with gum.

On the 22nd and 24th, tongue was moist, and lost its red colour. On the evening of the 24th, profuse sweat; on the 25th, sweating on the abdomen; expectoration, since the preceding day, of a considerable quantity of yellowish, very thick sputa. Remarkable amendment.

On the four days after, very profuse sweats, copious, purulent sputa. Slight purging set in. The amendment became more and more marked. (Same medicines, some broths.)

On the 30th, he complained of having felt the entire night severe pains in the limbs. At the visit we found him perspiring, as on the preceding days, but we observed that the fingers of the two hands, except the index fingers, were flexed forcibly on the palm. The patient could extend them but very imperfectly, and with considerable difficulty. He was going on in other respects very well, had no fever, and might be considered convalescent. (Infusion of camomile, rice cream, broths, a little wine.)

From the 13th of May to the 3rd of June, three ounces of syrup of quinquina were given every day, principally with the view of combating the profuse sweats which, being prolonged beyond measure, seemed to retard the progress of convalescence.

On the 3rd of June the quinquina was substituted for the syrup. M. Chomel, who took up the temporary management of the ward, tried to stop the slight purging, which continued, by adding to the barley ptisan a small quantity of muriatic acid.

From the 3rd to the 9th, the state of the patient remained nearly the same. He became cast down, and his strength was not re-established. The flexion of the fingers continued.

On the 10th the stupor re-appeared; pulse again became frequent. The patient had been told that the plague reigned in the Parisian hospitals. This false news alarmed him very much, and he considered himself as doomed to inevitable death.

On the 11th and 12th features rapidly decomposed; slight convulsive movements of the levator muscles of the left commissure of the lips; eyes fixed and wide open; pupils equally dilated; flexion of the fingers; intelligence clear; pulse slow; tongue moist and bright red; from two to three stools. (Same prescription.)

On the morning of the 13th the countenance had a cadaveric aspect. The extremities were icy cold. A cold sweet oozed from the entire surface of the skin. The pulse was no longer felt. Still the intelligence retained all its clearness. The patient continually asked to drink. The tongue retained its natural appearance. Considerable epistaxis had occurred the evening before. He died in the course of the day.

Post mortem. About a spoonful of limpid serum was found in each lateral ventricle. None was found at the base of the cranium. Lungs very slightly engorged posteriorly.

Abdomen.—The stomach when viewed exteriorly was divided into two portions by a circular contraction at nearly its middle part. The small intestine, including the duodenum, was very pale, as far as about half a foot above the cæcum. It merely presented, in its lower part, six or seven oval patches, the bottom of which, being greyish, was studded with a number of small black points, close one to the other. At about six inches above the cæcum, the mucous membrane was considerably injected, but had not, however, lost its transparence. The inner surface of the large intestine, from the cæcum to the rectum, was studded with a great quantity of small black points isolated, and not agglomerated, as in the small intestine. Around them the mucous membrane made a slight projection, the result of which was an appearance entirely similar to that presented by the mucous cryptæ of the skin when they have attained greater development than ordinary. Between them the mucous membrane was white in several points, and injected in other points.

Do we find in this patient any lesion sufficient to account for the symptoms and death?

In order to answer this question, it is necessary to distinguish in this disease the three following stages:—

1st *stage.* It commences at the time of the invasion and extends to the period at which the patient entered the hospital.

2nd *stage.* Commencing at this last period; it is characterised by the appearance of the purging, the dryness of the tongue, and the progress of the stupor.

3rd *stage.* It commences on the 31st of May; the signs of a cerebral affection predominate; the tongue resumed its natural appearance, a little purging continues.

During the two first stages the intestinal follicles were very probably the seat of an inflammation, the intensity of which increased with the severity of the symptoms; if the patient had died at this stage, very probably Peyer's patches would have been found red, swollen, and forming on the inner surface of the small intestine those oval elevations, of which we have had numerous instances in the preceding cases; at a little later period we might have found with this exantheme of the small intestine numerous red pustules (boutons) scattered over the large intestine; we then might have been able readily to establish a relation between the symptoms observed during life, and the intestinal lesions found after death, and this case would have afforded merely a repetition of the preceding. But it was not in these first two stages that the patient died; far from it, the alarming symptoms which he then presented, improved; the purging diminished; the tongue became moist; the strength was raised; and what is called the adynamic state disappeared; the intestinal lesions which we have seen hitherto uniformly correspond with this state, must then also diminish; this is accordingly what took place; and when we opened the body, we found no trace of it but an unusual development of the follicles of the ileum and of the large intestine; again, in a little time these follicles would have been completely effaced, or else they would have continued, and the individual would have remained subject to frequent returns of diarrhœa, without other serious symptoms *.

The disease then was progressing towards a cure when new symptoms supervened, which seemed to have their origin in a serious lesion of the nervous centres; no appreciable lesion of these centres was found in order to explain them; however, the stupor, which in twenty-four hours became extreme, the peculiar expression of the eyes, the permanent contraction of the flexors of the fingers, the convulsive movements of the muscles of the face, finally, even the nature of the cause to which the relapse might be attributed, seemed to indicate the existence of acute meningitis. There was observed, however, neither pain of head, nor delirium. But in how many varieties of meningitis do we not see these symptoms wanting?

In this 3rd stage was another organ the seat of a lesion which might account for the nervous symptoms which characterise it? Had the brain, which was found healthy, been but sympathetically irritated? In vain we sought for this seat in the remainder of the digestive tube, which presented nothing abnormal except this development of the follicles, to which we have already directed attention. Such as we found it at the time we examined the body, it was very evident that this lesion of the follicles could exercise no influence on the symptoms of the third stage. Here then is a well-marked case in which pathological anatomy cannot account in any way either for the functional disturbances, or for the death of the patient.

But the disease, though not having left in the organs any trace of its existence, had nevertheless a most evident seat; the symptoms indicated that this seat resided in the nervous system. The brain, strongly acted on by an intense moral emotion, was irritated, and drew to itself the little strength which the individual still possessed. Thence the increase of the prostration, which made rapid progress, at the same time that the nervous centres appeared to become the seat of a constantly increasing vital action.

Let us now direct our attention to some of the phenomena of the disease, and to its treatment.

The tongue red and white in the first stage, dry in the second, presented in the third a natural appearance. However, with this natural state of the tongue, and though on opening the body the stomach was found to be very healthy, the patient was tormented with a burning thirst. This thirst seemed to be sympathetic of the state of the brain, in the same manner, as under other circumstances, we see delirium, convulsions, etc., manifest themselves, as phenomena sympa-

---

* We have found a similar development of the intestinal follicles, 1st, in persons, who, several months before, had had what is called adynamic fever; 2ndly, in others, who never had any such disease, but in whom for a longer or shorter time, there existed a chronic diarrhœa; 3rdly, in some other individuals, who, never having had a bad fever, had not even been affected with purging towards the termination of life. It is very common to find them in the intestines of animals, in those of dogs, horses, and sheep. It appears that the intestinal follicular apparatus is naturally more developed in these animals than in man; likewise what in them is an entirely physiological state, can no longer be regarded as such in man.

thetic of the state of the stomach. Most of the acts of the life of nutrition may thus be increased, diminished, or peverted in their exercise by the sole influence of the nervous system, and without corresponding material lesion.

The constipation existed at the commencement of the disease at a period when very probably disease of the follicles already existed; it was replaced towards the thirteenth day by a purging which was never very considerable, but which continued up to the last.

The abdomen was considerably soft and free from pain.

The pulse presented remarkable irregularity at a time when the disease as yet presented nothing serious. This irregularity disappeared according as the disease assumed a more unfavourable character. Can we assimilate this case to that of a man mentioned by De Haen, whose pulse, intermittent in the state of health, became irregular every time he had fever? Shall we again assimilate it to the following case cited by Rasori? (Petechial fever of Genoa, Case 14.) In an individual attacked with the epidemic disease, the pulse, which during its progress had never been intermitting, became so on the cessation of the fever; the patient then stated, that in his habitual state of health he had an intermitting pulse.

The treatment was at first antiphlogistic; and we have seen how useful the first application of leeches was. Under its influence, not only did the symptoms of the gastro-intestinal inflammation improve, but also the stupor disappeared, and the strength rose. After this first blood-letting a profuse sweat came on; but the improvement was but temporary, and the second application of leeches was far from being as serviceable as the first; at least it was followed by a rapid increase of the prostration. Did this different result of the two bleedings prove that, when the first was resorted to, the strength was only oppressed, whilst at a later period a real adynamic state existed? Brown would have seen here a case of that indirect debility, which he considered, as succeeding, in most diseases, the sthenic stage. Tonics were then tried; but the quinquina was scarcely given when the tongue became dry; it was followed by polygala root; and during the use of the latter substance the tongue again became moist.

However, the disease did not attain a crisis; its prognosis was still very uncertain, when on the evening of the sixteenth day, profuse sweats and puriform expectoration spontaneously set in. This double evacuation which was accompanied by a well-marked improvement, continued to go on the four or five following days. Was it critical, in the sense which authors attach to this term? We have seen in the other parts of this work, and we shall again see in the present part, a certain number of cases in which there was a remarkable coincidence between the appearance of a sweat and the rapid transition from a bad state to a decided convalescence; but it is more rare to see the appearance of sputa coincide with such a change. On reading the works of authors it is easy to see that the sputa which they have called critical, are frequently nothing else than the natural termination of a pulmonary catarrh which complicated the disease, and which was resolved simultaneously with it. It does not appear, however, that such was the case with our patient. He expectorated all at once opaque, purulent sputa, without having presented on the preceding days any symptoms of pulmonary irritation; but he had not been examined with the stethoscope.

We should observe also that the sweat lasted beyond the time during which it could be considered as critical.

Case 26.—*Recent arrival at Paris—Symptoms of typhus fever—Treatment by blood-letting at the commencement; at a later period simple diluent drinks—Death by pneumonia during convalescence—White ulcerations towards the extremity of the small intestine.*

A mason, twenty-eight years of age, residing in Paris for only a few months, entered the Charité with the different symptoms which characterise bilious fever; sub-orbital headach; yellow tint around the lips and alæ nasi; great flush on the cheeks; tongue covered with a thick yellowish coat; bitter taste in the mouth; desire of acid drinks; thirst; abdomen soft and free from pain; three or four liquid stools in the twenty-four hours; pulse frequent and hard; acrid heat of skin; answers embarrassed and painful; intelligence dull; the patient has but a confused recollection of what happened him previous to his entering the Charité. (Twenty leeches to the anus; barley ptisan; diet.)

Same state next day (barley ptisan; sinapisms).

On the following days the tongue became red and dry; abdomen slightly tympanitic; purging continues; intelligence more and more obtuse; same delirium from time to time. A bleeding of twelve ounces was resorted to; twenty-four hours after ever thing became worse; the patient no longer answers questions; the tongue was observed to be dry and cleft; a viscid mucus, of a dirty grey colour, covered the lips and teeth; seven or eight liquid stools; pulse very frequent and weak; skin had but little heat; some subsultus tendinum. (Barley ptisan with gum; diet; sinapisms to the legs.)

During the six following days the state of the patient remained unchanged; nothing given him but the barley ptisan.

At the end of this time the intellects gradually recovered their integrity, the stupor diminished; the movements became more free; the tongue became moist; the lips and teeth became clean; the purging diminished; but did not entirely disappear.

The patient was soon considered convalescent; he no longer presented any other morbid phenomena but a little purging; the skin remained constantly dry. Some broths were allowed him, then some potage, and also a little wine.

The state of convalescence became more and more established, though there still remained a little purging, when one day we ascertained the return of the fever; the patient told us that since the day before he was attacked with a stitch in the side; we soon discovered all the signs of commencing pneumonia. On the following days it became more and more intense, and terminated in death. No bleeding employed; blisters were applied to the chest and lower extremities.

Post mortem. Red hepatisation of the lower and middle lobe of the right lung; slight membraniform exudation on the pleura of this side.

Remarkable paleness of the gastro-intestinal mucous membrane, from the cardiac orifice to the anus. At the distance of a foot below the cæcum we found five or six white points where the mucous membrane was wanting. In its stead the submucous cellular tissue was found exposed, which was not in any way changed.

It appears to us probable that the parts of the ileum where we found no mucous membrane were the seat of old ulcerations which were on the point of cicatrising; a slight diarrhœa was the only sign which could incline us to think that there was still some lesion of the digestive passages when every thing announced a state of convalescence. If the pneumonia had attacked this individual only a little later, it is very probable that we could not have found ulcerations, properly speaking, and that in those places where we found the submucous cellular tissue exposed, we would have met a membrane of new formation, similar to that of which the following case will present us an example.

If it cannot be affirmed that in the subject of this case the blood-letting was injurious, at least it may be remarked that it did not arrest the progress of the disease; far from it, the day after the bleeding, the adynamic state was more decided, and all the symptoms became evidently aggravated. We think that much harm would have been done by following up the bleeding. On the other hand, would tonics have been useful? The preceding case would incline us to answer the question in the affirmative. Be that as it may, we refrained from them here entirely, and if we except some sinapisms applied to the legs, the patient was entirely left to nature. Alone, she sufficed to bring this serious affection to a happy termination; alone also, she would probably have finished the entire cicatrisation of the intestinal ulcers.

This cicatrisation is sometimes deferred for a very long time; there are cases where the ulcers survive the acute disease, and occasion chronic diarrhœa, which is accompanied by a slow fever, and ultimately carries the patients to the grave after having gradually reduced them to the last degree of marasmus. We saw an instance of this in a young girl, seventeen years of age, who entered the Maison de Santé with the very worst symptoms of an ataxo-adynamic fever. For nearly a month she had the tongue dry and black, the abdomen tympanitic, continual diarrhœa, a very frequent pulse, an acrid heat of skin, and different nervous symptoms, such as stupor, delirium, coma, subsultus tendinum, etc. At the end of this time the tongue again became moist and pale, the abdomen fell, the nervous symptoms disappeared, the skin lost its heat, but the pulse retained a little frequency, and the diarrhœa did not stop. The purging continued for the two following months; five or six stools occurred every day, the abdomen in other respects was flat and completely free from pain There was no other morbid phenomenon but this diarrhœa, and the patient continued to pine away from day to day, and fell into a state of marasmus. She died in three months. Some leeches applied at the commencement, either to the anus, or over the abdominal parietes, blisters applied to different points of these same parietes, lavements with the laudanum or diascordium frequently repeated; at a later period lavements with the addition of rhatany root; simple mucilaginous drinks given by the mouth; such were the principal means employed; they were ineffectual. A strict diet was at first observed; subsequently the patient was nourished with different feculas, milk and eggs. She took her food with pleasure, except during the last fifteen days of her life, when bilious vomitings set in which accelerated death some days. At the post mortem we found the following morbid appearances in the digestive tube.

All the inner surface of the small intestine was remarkably pale, and all its coats were very much attenuated. In the lower sixth of the ileum, we found a number of Peyer's patches which formed a slight projection above the level of the mucous membrane, and which presented a bluish tint. Close to the cæcum there existed four ulcerations, two of which might each have admitted a five franc piece, and the other two did not exceed in diameter a forty-sous piece. The bottom of these four ulcers was formed by the muscular tunic, and here and there we observed in this same bottom which was white, some debris of the mucous membrane which had a bluish black tint. This same tint appeared, for the space of two lines, around each ulcer.

The inner surface of the large intestine presented a great number of small black points, which appeared to us to be so many follicles: between these points the mucous membrane was white, but very friable.

The mesenteric ganglions were but slightly developed.

With respect to the stomach it was coloured with bile on its inner surface through nearly all its extent. Its mucous membrane was every where of good consistence; it presented towards the pyloric region, somewhat of a mamillated appearance, not the least trace of injection was found in it. Thus the bilious vomiting which took place towards the termination of life could not be explained by an inflammatory state of the stomach, and the cause which for several successive days had brought bile into this organ, entirely escaped us. The liver was merely pale.

We should add that, as in the cases where death supervened during the acute stage, we found the spleen doubled in size, and softened.

In the cases now given, the continuance of the ulcerations kept up the diarrhœa, a long time after all the symptoms of the acute stage had disappeared. Here is another case which, like the preceding, occurred at the Maison de Santé, in which, though the ulcerations also continued, the diarrhœa ceased, at the same time that all the symptoms improved. The subject of this case was a man twenty-two years of age, who was admitted into our wards with the different symptoms of typhoid fever (stupor, disturbance of the intelligence, great prostration, tongue dry and dark, gaseous development of the abdomen, profuse diarrhœa, pulse very frequent, rose-coloured spots over the abdomen). By degrees these symptoms improved, and a sort of convalescence seemed to commence ; the tongue took on the most natural appearance ; the abdomen had become soft ; when pressed on every point, it was free from pain ; *the purging had ceased,* and it became necessary to administer lavements, in order to produce alvine evacuations. But on the other hand, the frequency of the pulse did not cease ; the patient continued to waste away, and every day his strength diminished. He remained for three months in this state, complaining of no pain, having his intellects perfect, taking some mild aliment, and seeming to digest them ; never going to stool, unless after the administration of a lavement, and never passing any thing but some hard scybala. Having arrived by degrees at an extreme degree of marasmus, he ceased to speak, his extremities became cold, his pulse disappeared, and he expired, after having merely lost, during the last twenty-four hours of his life, a little of the clearness of his intelligence. *The purging did not re-appear for a single instant;* the urine was remarkable for the insupportable fœtor, which exhaled from it at the moment it was being voided, it was at the same time very turbid.

The post mortem presented the following changes :

No appreciable alteration existed in the encephalon and its appendages. The left lung, remarkable for its great lightness, contained no blood ; the right lung was heavier ; towards the lower part of its upper lobe, there existed a circumscribed engorgement, which occupied the size of a large nut ; in this part the pulmonary parenchyma was impervious to air, granulated on being cut into, of a dirty grey colour, and very friable. The posterior part of this same lung was engorged.

The tissue of the heart was firm and pale. Its cavities contained clots formed of white fibrin. The vessels were not coloured, and contained a little liquid blood. At the union of its upper four-fifths with its lower fifth, the œsophagus presented two oval ulcerations, the greater diameter of which lay in the direction of the axis of the œsophagus. A little below these ulcerations, the epithelium was destroyed, then it re-appeared under the form of an irregularly cut band, to the extent of an inch in breadth around the cardia.

The stomach was every where white on its inner surface. In the pyloric portion the mucous membrane was mamillated ; in the splenic part it was sufficiently thin ; it existed however everywhere in this part, and everywhere it could be detached in shreds from the subjacent tissues. The stomach contained a small quantity of liquid free from any odour.

The duodenum presented nothing but a yellow colouring of the free edge of the valves.

The ileum, in its lower fourth, presented a great number of Brunner's follicles, white, and forming a projection above the level of the mucous membrane, and still further half a dozen elliptical patches. These had a black colour, which constituted as it were their bottom. Above this black bottom, there was observed a certain number of agglomerated follicles, similar to those of Brunner, and forming by their assemblage as it were a second plane not continued, and of a greyish white colour, above the other plane, which was deeper and blacker. In certain points of these patches, ulcerations were found, whose edges were black, and whose bottom, on a level with the edges, was formed of the muscular membrane, the transverse fibres of which were seen exposed and perfectly white.

The valve and inner surface of the cæcum presented a slate-coloured tint. In the colon there was found a great number of small follicles, scarcely projecting, but easily recognised by means of a black point, which constituted the centre of a slight elevation, where the mucous membrane was of a duller white colour, an elevation which was circumscribed by another greyish circle.

In one point of the colon there was found an ulceration which appeared to have a tendency to cicatrise. This rounded ulceration, capable of containing a five-sous piece, was limited by a black circle. Its bottom was on a level with the rest of the mucous membrane; it was formed by a fine membrane similar to the membrane of the sinuses, in which was seen a vascular net-work.

The spleen was not large, and was rather soft. The liver was pale and dense. The urinary apparatus was healthy.

CASE 27.—*Ataxo-adynamic symptoms—Death by pneumonia during convalescence—Thin membrane, without follicles, or villi, continuous with the mucous membrane, in the points ordinarily occupied by the aggregated follicles.*

We did not see during his life the individual who forms the subject of this case. We ascertained that having entered the Charité two months before, he there presented all the symptoms of typhoid fever; that he was completely cured of it, and that he was on the point of leaving the hospital, when he was attacked with pneumonia, of which he died.

We found a mixture of red and grey hepatisation in a great part of the left lung. The stomach presented a slight arborisation towards its great cul de sac; this same arborisation was observed in several points of the small intestine. Near the cæcum there appeared seven or eight places where the mucous membrane was much thinner than elsewhere; on examining it under water in the sun, we found that in these same places this mucous membrane, which appeared unusually thin, presented no trace of villosities, which were very numerous in the surrounding parts; one would have taken it for a portion of the bronchial mucous membrane. These places corresponded to those which are occupied by Peyer's patches. We thought that there was a period of the disease when those patches were destroyed; that at a later period the ulcers which had succeeded the destruction of the mucous membrane were cicatrised, and that the membrane found in the place ordinarily occupied by these patches was a newly-formed mucous membrane, a simple cellulo-vascular layer, which now, however, was continued with the portions of the mucous membrane which had formerly constituted the edges of the ulcers. Were villosities formed afterwards over this new membrane?

In the different cases which we have hitherto cited, we have been able to see the dothinenterie arise with the fever, continue through its entire course, and cease with it, or only a mere vestige remain after it. Why then should we not attribute the greatest influence in the production of the symptoms to a lesion which appears and disappears with them? Yet cannot these symptoms exist only when there is dothinenterie? The following cases will prove the contrary.

ARTICLE II.

CONTINUED FEVERS, CONNECTED WITH OTHER FORMS OF GASTRO-INTESTINAL INFLAMMATION THAN FOLLICULAR ENTERITIS.

In all the cases included under this article, we shall still find the different symptoms which the cases under the first article presented to us, and the aggregate of which constitutes the ataxic and adynamic fevers, such as Pinel has described them. But in some of these cases only, we shall see these fevers present the same course, the same duration, the same connexion of morbid phenomena, as in those which are connected with special inflammation of the intestinal follicles: they will still be typhoid fevers, in the sense which M. Louis has attached to the term. They are, no doubt, mere exceptions, and it remains no less true that the typhoid fever, such as M. Louis has described it, coincides almost always with an affection of Peyer's glands; but these exceptions, of which M. Louis himself has published two cases, it is important to notice.

This fever, which is characterised less by the symptoms which accompany it, than by their aggregate and by the manner in which they are connected, and succeed each other, we shall no longer find in other cases, which, however, shall still present to us the *typhoid state*, or, if it be preferred, those same ataxic or adynamic symptoms, which acquire in typhus, properly so called, their maximum of development.

CASE 28.—*Delirium and other nervous symptoms—Tongue natural—Numerous ulcerations in the stomach—No other lesion.*

A shoe-maker, forty-five years old, of a very strong constitution, entered the Charité, October 4th, in such a state of delirium, that we could obtain no information with respect to his previous state.

On the morning of the 5th, we observed him in the following state: eyes haggard, sardonic grin, no answer to questions. Countenance expressed pain on making even slight pressure on any point whatever of the abdomen; but it also expressed it, when pressure was made either on the ribs, or the extremities. Tongue moist, and of the ordinary appearance; no stool since his admission; breathing free; pulse sufficiently full, and of moderate frequency; little heat of skin. He died at eight o'clock at night.

Post mortem. The inner surface of the stomach presented along the great curvature six or eight small superficial, rounded ulcerations, with red bottoms, their diameter being on an average that of a centime. In the interval between them the mucous membrane was but slightly red.

No alteration existed in the rest of the digestive tube; it presented some few red patches. Nothing remarkable in any of the other organs.

In this case, as in several of the preceding, the brain appeared to be the origin of all the symptoms; in this organ the primary seat of the disease seemed to be. Still the brain and its appendages were found to be exempt from all lesion, and the digestive tube, which had presented no functional disturbance during life, was the only part found altered in the dead body. But this alteration differs very much from those seen in the preceding cases. Peyer's patches were intact; the small intestine as well as the large was healthy; the stomach alone was diseased; and what is very remarkable is this, that, when the inner surface of the stomach was studded with numerous ulcerations, the tongue presented during life the most natural appearance.

The symptoms presented by this patient differ not in other respects from those which we observed in a great number of individuals, in whom Peyer's glands were especially affected. We shall again find, in several of the cases which are to follow, the same identity of symptoms with lesions which shall always reside in the digestive tube, but which shall differ considerably from each other, either in their seat or in their nature.

CASE 29.—*Ataxic symptoms; alternations of delirium and of perfect intelligence; hydrophobia; convulsions—Tongue natural; pulse not frequent—Redness in different points of the digestive tube—Injection of the cerebral substance—Pulmonary tubercles.*

A man twenty years of age, who had a cough for a year, and had spit blood several times, felt general illness during the first of November. On the 10th, he entered the Charité. He coughed very much; his sputa were viscid, a little bloody; pulse scarcely frequent. (He was bled to two palettes.) Blood was not buffed. On the 11th, he was in a state of torpor. When questioned, he returned no answer; when raised, he fell back as an inert mass, and hid his head under the clothes. Pulse was remarkably slow; countenance very pale; tongue preserved its natural appearance. Some symptoms seemed to mark the commencement of acute hydrocephalus. (Eight leeches were applied on each side of the neck; sinapisms; barley.)

Agitation and delirium all the night. In the morning of the 12th, drowsiness; pain in the left temple; right pupil perceptibly more dilated than the left; cheeks a little red; lies on the right side; tongue white and moist; breath fœtid; abdomen free from pain, and soft; two stools; pulse 46. (Blisters to the legs; whey with the addition of half an ounce of sulphate of soda to the pint. The following mixture to be taken in spoonfuls:—orange flower water 4 ounces; mint water 1 ounce; acetate of ammonia 1 drachm (gros); sulphuric ether 1 drachm; syrup of violets 2 ounces.)

In the course of the day frequent alternations of profound stupor and violent agitation; no stool.

On the 13th, the intellectual faculties were alternately lucid and very much disturbed; the inequality of dilatation of the pupils continued; the respiration was sometimes very slow, sometimes very much hurried; pulse fifty-five; heat of skin moderate; the face became red and pale alternately. (Lavement, with the addition of an ounce of senna and six grains of tartar emetic; a pint of veal broth with half an ounce of sulphate of soda; aromatic frictions on the extremities.) Copious stools in the course of the day.

On the 14th, the same state. On the 15th, the patient had a sort of horror of liquids. The moment any thing was offered to him to drink, his face became injected, his eyes were flushed, his lips were moved convulsively; and if a little liquid was introduced into the mouth, he threw it out with force; the tongue retained its moisture; pulse sixty. (Two more blisters to the thighs.)

On the 16th, the symptoms of hydrophobia of the preceding day no longer existed; the right eye was forcibly turned inwards; the pupil of this eye constantly remained more dilated than the other, the left eye-lid was depressed; pulse not frequent. (Emollient ptisans; camphorated lavement.)

On the 17th, the right eye-lid was now paralysed; an enormous quantity of urine distended the bladder; great talkativeness; subsultus tendinum; tongue always moist.

On the 18th, head and face were inundated with sweat, whilst the skin on the rest of the body was dry; the eyes were closed; the pupils, very much dilated, scarcely contracted on the approach of light; subsultus tendinum very much increased; face very red; pulse frequent for the first time (101); no stools. (Purgative lavement; whey with tamarinds.)

Profound stupor the entire day. Death without a struggle at 7 o'clock at night.

Post mortem eighteen hours after death. *Cranium.*—Cerebral sinuses filled with blood, cerebral substance of ordinary consistence, marked with a considerable quantity of red points; about a spoonful of limpid serum in each lateral ventricle.

Thorax.—Old adhesions of the pleuræ on both sides; right lung studded with miliary tubercles; cavity at its apex, capable of lodging a pigeon's egg, filled with pus. In the left lung, equally filled with crude tubercles, there was a larger cavity, which was empty. Heart pale, filled with liquid blood.

Abdomen.—Adhesion of the great epiploon to the abdominal parietes by old cellular bands; the stomach presents internally to the left of the cardia a red patch, broad as a three-franc piece; every where else the mucous membrane is white and healthy; most of the valves of the duodenum were of a bright red colour; in the intervals between them the mucous membrane presents a rose tint.

The small intestine, opened through its entire extent, presented here and there, towards its middle part, merely some reddish valves and a few arborisations. Invagination of three inches of the upper third of the jejunum ; a considerable quantity of bile filled all the small intestine. The large intestine, filled with hard fecal matters, was very white.

An enormous quantity of limpid urine distended the bladder, as well as the ureter, pelvis, and calices of the right kidney.

In this subjeet we find very slight lesions in the digestive tube. The red patch in the great cul de sac of the stomach, the redness of the valves of the duodenum, the slight injection of some points of the small intestine, are observed in many cases where, during life, symptoms altogether different have existed ; thus we think that here there are strong reasons to doubt that very slight lesions found in the digestive tube were really the cause of the ataxic symptoms observed during life. Can the injection of the brain account for them ? That also may be doubted.

In this case, as in the preceding, the tongue appeared very different from what we have found it in most of the cases of dothinenteries, which form the subject of the observations contained in the preceding article.

Let us remark also how varied the symptoms were : among those symptoms we may recollect the inequality in the dilatation of the pupils, the temporary deviation of one of the eyes, the alternate paralysis of the two upper lids, the rapid transition from lucid intellect to complete delirium, from profound coma to the most violent agitation ; the well-marked hydrophobia which existed for twelve hours. On the part of the functions of organic life, we should recollect the respiration sometimes accelerated, and sometimes very slow ; the disturbance of the circulation marked in the small vessels by the quick alternations of redness and paleness of the face, in the heart and great arterial trunks, by the extreme slowness of the pulse ; the bladder struck with paralysis ; the muscular fibres of the large intestine, which had also become insensible to the action of purgatives ; in the midst of all these disturbances the tongue remaining in its natural state.

The treatment was directed exclusively against the cerebral symptoms. By perusing the details of the case, it may be seen how far these symptoms were influenced, 1st. By the two bleedings employed towards the commencement. 2dly By the blisters applied to different points of the cutaneous surface. 3dly, By several stimulating substances, called antispasmodics, administered by the mouth, or in the form of lavement. 4thly, By the purgatives taken several times into the digestive tube, sometimes by the stomach, sometimes by the rectum.

CASE 30.—*Fever at the commencement ; epigastric pain ; vomiting—Subsequently symptoms of tetanus and death—Intense redness of the stomach.*

A middle-aged man was seized, without any known cause, four days before entering the hospital, with profuse bilious vomiting, pain in the epigastrium and fever. About twenty hours after the appearance of these symptoms, this person began to feel some difficulty in depressing the jaw ; violent trismus soon set in, and continued for the two following days. Having entered the Charité at the end of this time, he presented the following state :

Trismus. Head retroverted and kept in this position by the muscles inserted into the occipital bone ; rigidity of the four extremities ; abdominal parietes hard as a board ; intelligence intact. The patient himself detailed to us the particulars now described : he articulates distinctly enough, notwithstanding the trismus. He no longer experiences any pain in the epigastrium, and did not vomit since the appearance of the first tetanic symptoms. After the visit he was removed into the surgical wards, and died there that same night.

Post mortem. Cranium.—Slight injection of the membranes ; some red dotting of the cerebral substance. The different parts of the encephalon examined with the utmost care, presented no appreciable alteration. *Spine.*—Sound state of the spinal marrow and of its membranes, which were pale.

Abdomen.—The gastric mucous membrane presents through its entire extent an intensely red colour, which is not perceptible until a thick layer of mucus which lines the surface has been removed. This colour, which resides in the mucous membrane, is owing to the injection of an immense number of small vessels, the beautiful anastomoses of which may be readily traced by the eye. The membrane is not, in other respects, perceptibly softened. The rest of the digestive tube white. The tissue of the spleen remarkable for its consistence.

We have seldom seen in the stomach so intense and so extensive a red colouring; one would have said at first, that the inner surface of the stomach had been uniformly tinged. The mucous membrane thus coloured had retained its physiological consistence; only its habitual secretion seemed to have been increased.

The onset of this gastritis had been well-marked; but the tetanic symptoms had scarcely commenced to show themselves, when the symptoms referable to the stomach became much less evident.

If the tetanus was, in this individual, the result of irritation transmitted sympathetically from the stomach to the spinal cord, there must be admitted to exist in this person a special predisposition, in virtue of which tetanus would have equally declared itself, no matter what organ had become the seat of irritation. Thus we remember to have seen at the Charité an individual labouring under chronic pleuritis, who, after the application of a seton on the chest, was attacked with tetanus, of which he died.

Case 31.—*Symptoms of acute meningitis (ataxic fever)—Tongue natural—Profuse blood-letting—Intense injection, in several points, of the mucous membrane of the lower third of the small intestine.*

A man, thirty-three years of age, black hair, brown skin, muscles well developed, felt, on the 8th of October, a weight of head more inconvenient than painful. In the evening there was general uneasiness; delirium at night. He entered the Charité on the 9th. When seen by the clinical clerk, he was rational; but he complained of dizziness, of tinnitus aurium; some purging since morning. At night he raved again.

At the visit of the 10th, he presented the following state: remarkable exaltation in his ideas; great loquacity; still his answers were clear and precise; extreme activity in his movements; face red; expression of the eyes natural; pulse full, very hard, moderately frequent; temperature of the skin natural; tongue moist and clean; abdomen soft, and free from pain. Three liquid stools the last twelve hours.

In this individual the brain seemed to be the seat of a sanguineous congestion, indicated, at present particularly, by the exaltation of the intelligence, and at night by its perversion. (Bleeding to three palettes; diluent ptisans.) No change in the course of the day; two or three stools. In the evening and at night there was acceleration of the pulse, return of the delirium.

On the morning of the 11th, reason returned, and we found the patient in the same state as at the visit of the 10th. (Another bleeding to the extent of three palettes; sixteen leeches to the neck.) The blood of both bleedings was covered with a thick buffy coat.

In the evening there was delirium, as on the preceding days; at night the patient became furious; he broke the cords with which he had been tied, and four men could scarcely hold him. On the morning of the 12th, the delirium continued. The patient lying on his back; face very much injected; eyes sparkling and rolling violently in the orbits; he uttered continual cries; in the midst of his delirium he spoke only of objects connected with his state; profuse sweat poured from the skin of the cranium and face ; the rest of the skin was dry. The constant movements of the arms did not allow us to ascertain the state of the pulse. The tongue retained its natural appearance. Such was the state of the patient at eight o'clock in the morning. (Thirty leeches to the neck ; bleeding from the arm.) One hour after, at nine o'clock, the blood from the leech bites flowed profusely ; venesection was performed, notwithstanding the violent resistance of the patient. However, no improvement occurred : at half past nine again he exerted great muscular strength ; we heard his voice at more than fifty paces from the bed ; all at once he ceased to vociferate ; his face became injected and swollen ; his extremities rigid ; his respiration was arrested ; and in less than five minutes he expired.

Post mortem. Pia mater of the convexity of the brain but slightly injected. Small quantity of limpid serum in the ventricles, such as is seen after all kinds of death. The cerebral substance, when sliced, preserved everywhere its natural consistence, but it presented everywhere a great number of small red points, from which blood flowed. Neither the spinal cord, examined through its entire extent, nor its membranes, presented any appreciable lesion.

The lungs were healthy. The heart presented remarkable dilatation of the left ventricles, without hypertrophy of its parietes.

The inner surface of the stomach was white, as also that of the small intestine, as far as the union of its upper two-thirds with its lower third. In this latter third there were observed numerous red spots, seated in the mucous membrane, which in other respects appeared neither denser, softer, nor thicker than in the interval between those spots, where it was white. Thus, these spots represented a multitude of circumscribed inflammations, none of which had passed the first stage, or, in other words, that wherein there is as yet only injection of the mucous membrane, without thickening or softening of its substance. Large intestine white.

In the individual whose case is here given, the cerebral symptoms were so predominant, that they seemed to announce an idiopathic lesion of the encephalon ; and particularly a well-marked lesion of the membranes. The nature of the phenomena, the continual exaltation of his ideas with intermittent delirium, and, in the last stage, a furious delirium, seemed even to indicate that this inflammation had its site particularly in the arachnoid which covers the convexity of the cerebral hemispheres ; yet no arachnitis existed, and the extremity of the small intestine alone presented an inflammation which, during life, had not been disclosed by other signs than a very slight diarrhœa. It now remains to be determined whether this inflammation, sympathetically irritating the brain, occasioned the frightful group of nervous symptoms which brought the patient to the grave. I shall content myself with stating the fact, leaving the reader at liberty to admit or reject this connection between the intestinal inflammation and the cerebral symptoms : it is because this case is so very marked, that I thought it deserving of some interest. I shall once more call attention to the manner in which death supervened. Here death struck the patient suddenly, when the vital energy was still very great, and it was, in a manner, without any intermedium, that life was arrested in him. Would it not appear that, in this case, the sinking of the brain succeeding its excess of action suddenly, the suspension of the breathing, and consequently of all the functions, was the result of the sudden and complete cessation of the nervous influence ? Let us not strive to search too deeply for the cause of these phenomena, which a century back would have been accounted for very differently, and which will one day probably be explained in a manner just as different as that in which we now explain it, whether in consequence of additional knowledge being acquired, or by reason of the prevailing medical opinions.

Some of the cases now given entirely resemble those where there was dothinenterite, in the existence of nervous disturbances; in them, however, the symptoms called ataxic are much more prominent than those called adynamic; in them also the tongue scarcely deviated from its natural state; we have also seen this natural state of the tongue retained in some cases of dothinenterite, but much more rarely. In these cases the abdomen was not tympanitic, but we have seen this phenomenon wanting also in many individuals affected with dothinenterite. Here now are two other cases in which this latter phenomenon was also wanting, as well as in the preceding, and still where the symptoms were much more completely those observed in dothinenterite.

Case 32.—*Symptoms of typhus; tongue dry and black only at intervals; tympanitic state of the abdomen towards the end—Alternations of quick excitement and great depression—Blisters; camphor in lavement; wine and broth; ice to the head—Death towards the 20th day—Partial redness of the gastro-intestinal mucous membrane—Injection of the cerebral substance and of the membranes—Spleen large and soft; liquid blood in the heart.*

A man, about thirty years of age, with black hair, brown skin, strong make, with considerable embonpoint, was brought to the Charité on the 27th of February, in such a state that we could obtain no information regarding his previous history: we merely ascertained that he was sick for the last fifteen days; that on the 23rd of February he had taken a vomit, and that the day after leeches were applied to the epigastrium. 25th, he had ceased to speak. Brought to the hospital on the 27th; he answered no questions; features were expressive of great stupor; skin cold; pulse scarcely perceptible; small rose-coloured spots, most of them being from half a line to three lines in diameter, were scattered in considerable number over the anterior part of the chest and abdomen, also on the upper and lower extremities. They were fewer on the extremities than on the trunk. We could see only the extremity of the tongue, which appeared very dry; the abdomen was soft; no stool since he entered the hospital. (Wine-whey; frictions of the extremities with volatile liniment and cantharides; two blisters to the legs; lavement of marsh-mallow with the addition of a scruple of camphor.)

In the course of the day the patient uttered some unconnected unintelligible words. His bladder was filled with urine; he was sounded twice.

The next day, 28th, his countenance had a cadaverous paleness. Unconscious of every thing which passed around him, he seemed to reflect; his features were immoveable. When questioned, he did not answer at first; some minutes after, he seemed to come to himself, and answered slowly, but accurately—he then relapsed into his former state. He lay on his back, with his arms extended along the trunk. The eruption more confluent than the day before. Frequent subsultus; skin a little warm; pulse improved; it was very frequent, very compressible and intermittent at intervals. The tongue, which he was unable to put out, though desirous to do so, was smooth and dry at its apex, and covered with a blackish coat at its upper surface: one stool. Abdomen still soft; paralysis of the bladder remained. (Same prescription.)

In the night the physical and moral torpor was succeeded by violent delirium, during which the patient sat up, and attempted to escape from the bed.

On the morning of March 1st, he was seen, from time to time, to sit up, look around him with an astonished air, then lie down again; he spoke not a word, nor did he seem to hear those who interrogated him, and appeared to direct his whole attention to some one fixed idea. The tongue was red and moist; no stool; even the lavement had not been discharged; subsultus tendinum diminished. The patient passed no urine for more than twelve hours; yet the bladder was empty. The eruption was in the same state. (Wine-whey; liniment as before; six grains of calomel in two packets; broth.)

March 2nd. Convulsive movements of the muscles of the face; great redness of the cheeks succeeded the cadaverous paleness; the eyes, haggard, rolled violently in their orbits; the lower jaw was continually moving; the muscles of the extremities were spasmodically contracted; patient uttered some unconnected words; tongue red and moist, lips and teeth rather dark, deglutition painful, abdomen a little tympanitic; two stools; pulse could not be felt, in consequence of the very frequent subsultus; profuse sweat covered the skin; the petechiæ were less numerous and pale. (Application of ice to the head, and at the same time sinapisms to the feet.)

In the course of the day the convulsive movements ceased.

On the 3rd, great prostration succeeded the violent agitation of the day before; the petechiæ were livid, face still injected, tongue again dry and brown; the dark coat of the lips and teeth very thick; the respiration, hitherto calm, was very frequent and loud, the expiration was shorter, inspiration more prolonged; pulse now thready, cannot be counted; the skin, which was moist, seemed to the touch as it were covered with a thick layer of oil.

He died in the evening.

Post mortem seventeen hours after death. The membranes of the convexity of the hemispheres were very much injected, each lateral ventricle contained from three to four tea-spoonsful of limpid serum; there was a little also at the base of the cranium and in the spinal canal. The white substance of the upper part of the hemispheres was marked with a great number of small red points.

The lungs were perfectly healthy, scarcely engorged; the heart contained a small quantity of liquid black blood.

The stomach was of the ordinary size, the mucous membrane of its splenic portion was studded with a number of small reddish points; the duodenum was pale; the small intestine, in its upper two thirds, presented a slight rose-coloured tint; the lower third was a livid red colour, and forcibly contracted. The large intestine, through all its extent, was perfectly white. The spleen was remarkably large and soft.

All the symptoms observed in the individuals affected with dothinenterite, are found in the patient whose history has been now given: however, the post mortem detected in him no trace of an affection of the intestinal follicles; there was nothing but an erytheme of different points of the gastro-intestinal mucous membrane; and it must be said, this erytheme was not more considerable than that met with in many other cases, where morbid states altogether different have been observed during life, and particularly where the tongue has been neither dry nor black.

With this different alteration of the digestive tube, we meet the very same state of the spleen as in individuals affected with dothinenterite.

The brain and membranes are the seat of considerable injection; but what importance are we to attach to a lesion whose existence is so inconstant in cases where the same functional disturbances have existed?

The individual who forms the subject of this case was distinguished from several of the preceding by his strong make, his well developed muscles, and his embonpoint. As others, however, who presented physiological conditions quite opposite, he presented the signs of great prostration when he entered the hospital; but these signs soon disappeared, and those of great excitement of the nervous system appeared; finally, twenty-four hours before death, the prostration again became the prevailing symptom. It seems then that we can understand better how life terminates than in some other cases above cited, where death suddenly struck the patients in the midst of great agitation, and when they still give proof of their strength by the violence of their cries and by the energy of their muscular movements.

Among the remarkable phenomena of this disease, we shall notice the petechial eruption, which faded away according as the disease proceeded towards a fatal termination; the sweats which took place towards the latter period, and which afforded no relief; the pale and livid tint of the face, and subsequently, its bright red injection; the pulse, which continued very weak, and became more and more frequent; the temperature of the skin, which was never but moderately raised; the tongue, which, dry and brown during the two adynamic stages, became clean and moist during the stage of excitement; in fine, the paralysis of the bladder, and, at a later period, the cessation even of the urinary secretion.

CASE 33.—*Acute gastritis developed after the use of a large dose of tartar emetic —Tongue dry and black; tympanitic state of the abdomen; state of adynamia.*

A man, fifty-two years of age, entered the hôpital de la Pitié with all the symptoms of well-marked pneumonia. He was first bled; then we commenced with him the use of tartar emetic, of which we gave him six grains the first day and twelve the second day, in three glasses of infusion of orange leaves, to which was added half an ounce of syrup of diacodium. At the time the patient commenced the use of tartar emetic, the digestive passages presented no signs of softening; the tongue was moist and whitish; there was neither thirst, vomiting, nor nausea; the abdomen was, in every part, soft and free from pain; scarcely a single stool occurred every two days.

The day after he took six grains of tartar emetic, he presented no symptom connected with the digestive passages; they appeared to us in the same state as the day before; some nausea took place, without vomiting. The signs of pneumonia in the second stage continued in all their intensity.

We now doubled the dose of tartar emetic, as we did in many other cases, without any unpleasant consequences.

On the same day, profuse vomiting came on, and purging also took place.

When we re-visited the patient, the vomiting continued as well as the diarrhœa; the tongue, till then natural, became red and dry. He complained of an acute pain in the epigastrium, which was increased by pressure. The use of tartar emetic was discontinued. However, during the twenty-four hours following, the vomiting continued; it then ceased, not to re-appear; but the digestive passages remained affected, and, during the six following days, we witnessed the development of still more serious symptoms.

Thus, the tongue becomes covered with a black coat, the lips and teeth become blackish. The abdomen becomes distended to such a degree that the course of the colon may be traced through the abdominal parietes; four or five stools took place every day. The countenance acquired a leaden hue, and presented an air of most marked stupor. Soon after the patient no longer answers questions; he is in a low muttering delirium; all his features are immoveable; some subsultus tendinum is perceived; the prostration becomes more and more considerable. The pulse acquires constantly increasing frequency, and death takes place twenty days after the invasion of the pneumonia.

Post mortem. All the left lung, except at its apex, presented a combination of red and grey hepatisation.

The stomach was contracted, and its inner surface lined with a greyish mucus. Beneath this mucus it presented through its entire extent, a slate-coloured ground, surmounted by an intensely red dotting; attentive examination soon showed that this dotting resulted from a fine and general injection of the villosities. At the same time that it is thus coloured, the mucous membrane underwent considerable thickening; far from being softened in any of its points, it was every where as if indurated, and had a granulated appearance. The valves of the duodenum were of a bright red colour. The small intestine presented nothing but slight injection of its mucous membrane to the extent of a foot above the ileo-cæcal valve. No follicle was discovered in this intestine. The cæcum participated in the injection of the end of the small intestine. The mucous membrane of the colon presented a number of red bands, between which it was white and of the natural consistence.

The liver, considerably gorged with blood, presented nothing abnormal in other respects.

If Pinel were to give a name to the disease which forms the subject of the case now read, he would have called it *adynamic fever supervening during the course of a pneumonia.* In fact, all the symptoms characteristic of this fever are to be found here. Yet, is it the disturbance of the nervous system which here opens the scene? By no means. It is in the digestive passages that the symptoms evidently commence (redness and dryness of the tongue; profuse evacuations up and down; epigastric pains). Then of these phenomena none remain save the redness of the tongue, and a little diarrhœa; but it is then that the *symptoms called adynamic* appear. All these disturbances succeed the use of the tartar emetic so suddenly, we so plainly perceive the several phenomena set out from the digestive passages, that we can scarcely refuse to consider that the employment of the tartar emetic was the cause of them. To this, no doubt, it will be said that in a thousand other cases nothing similar is observed; we grant it, but we also know that there are particular dispositions which render very dangerous the administration of large doses of tartar emetic, though, under ordinary circumstances, it may be harmless.

A short time since, for instance, we saw a man, forty-eight years of age, attacked with severe pneumonia, which had arrived at the stage of hepatisation, who was made to take in divided doses, only six grains of tartar emetic in a six ounce mixture. Before the administration of this medicine had been commenced, the digestive passages appeared to be in a healthy state; the tongue was moist and pale; we ascertained from the previous history that the patient had habitually good digestion. After the first few spoonfuls of the emetic solution, vomiting appeared; hopes were entertained that tolerance would be established, as happens in many cases, and the medicine was continued; but quite the contrary result took place; the vomiting became more and more frequent; the tongue, previously pale and moist, became red and dry as a bit of parchment; the two following days the patient did not pass a quarter of an hour without the vomiting being renewed; nothing could stop it, and he died from the exhaustion consequent on it. The body was not examined after death.

The case which suggests to us these reflections, presents then a well-marked example of what is called adynamic fever, produced by an acute inflammation of the stomach. Is this typhoid fever? No; it is not in the order and succession of the symptoms the pyrexia, which has for its anatomical character, inflammation of Peyer's glands; but with respect to the nature of the symptoms is it not a disease of the same family? It is a gastritis, in consequence of which adynamic symptoms become developed.

ARTICLE III,

OBSERVATIONS ON CASES OF DIFFERENT DISEASES ACCOMPANIED WITH TYPHOID SYMPTOMS, WITHOUT APPRECIABLE LESION OF THE DIGESTIVE TUBE.

As often as, after having observed the two morbid groups designated by nosographists under the name of bilious and mucous fever, we have been able to examine the state of the organs in the dead body, we have met lesions in the digestive passages, which have explained at least a part of the symptoms observed during life. Such was not always the case with the individuals who presented to us those different groups of morbid phenomena designated by the names of inflammatory, adynamic, or ataxic fever. In these cases we have very often found lesions of the digestive tube, which the preceding observations induced us to expect; but very often also we have been unable to establish any relation between the intensity of these lesions and the severity of the symptoms; so that, for instance, in the digestive tube of an individual who died during the course of a slight bilious fever, we found an alteration equal in its nature and intensity to that which we detected in the intestine of another individual who died with the very worst symptoms of an ataxo-adynamic fever. The preceding observations equally establish the same thing. If such be the case, is it not reasonable to think that the different lesions which anatomy discovers in the digestive tube of patients who die during the course of a bad fever, are not the sole cause of it? Should it not be laid down that the adynamic or ataxic phenomena depend much less, in these cases, solely on the nature or intensity of the intestinal lesion, than on the disposition in which this lesion, slight or severe, finds the innervation? If now these different phenomena called adynamic or ataxic, are observed in cases where, on opening the bodies, we find the digestive tube healthy, and other organs the seat of lesion, will not the proposition now stated be found singularly confirmed by such facts, and shall we not be warranted in saying that the symptoms called adynamic or ataxic are the result of a disturbance in the action of the nervous centres, a disturbance sometimes primary, and which may then exist with a lesion appreciable on opening the body; but most frequently consecutive, and then developed in consequence of the lesion of some organ, of the digestive tube, as of any other? The following cases go to prove the correctness of this mode of viewing the subject:—

These cases constitute two series: in some the typhoid symptoms coincide with lesions of different organs, which may be considered as their origin; these lesions are at least the occasion of their development. In the other cases these lesions themselves no longer exist, and it is to a primary but still indeterminate alteration of the nervous centres and of the blood, that the svmptoms should be referred.

SECTION 1.

TYPHOID SYMPTOMS, DEVELOPED IN CONSEQUENCE OF DIFFERENT LESIONS APPRECIABLE BY ANATOMY.

We have selected the following from among several other analogous cases, to show that diseases, the most different from each other in their seat, may equally have as their attendants, or termination, symptoms, always the same, which constitute the ataxo-adynamic or typhoid state. Thus we shall see these symptoms developed in consequence of an erysipelas, of a phlegmon, of different diseases of the urinary passages, of pneumonia, hepatitis, variola, measles, phlebitis, metritis, etc. In these cases, we again repeat it, we shall no longer find this same pyrexia, which accompanies follicular enteritis; it will not then be the typhoid fever of MM. Chomel and Louis; but it will always be the symptoms of this fever differently combined.

Case 34.—*Erysipelas of the face and trunk—Dark appearance of the tongue and mouth—Delirium—Prostration.*

A trader in umbrellas, forty-seven years of age, was attacked with erysipelas of the face, when he entered the Maison de Santé in the January of 1832. He answered questions with difficulty, and raved from time to time: the tongue, covered with a yellow coat, was at the same time very dry; pulse very frequent and skin very hot. We were not able to obtain any information regarding the previous history: thirty or forty hours after the patient's admission, desquamation commenced to take place in the face; but at the same time a new erysipelas appeared on the neck, and it gradually extended to the chest, back, abdomen, and to the commencement of the thighs. During ten days the erysipelas ceased not to extend. During this time the state of the patient became more and more alarming; complete delirium set in: at first this delirium was accompanied with great excitement; the patient became very restless and very noisy; he then fell into a state of great depression, and died comatose. From his admission to his death the tongue became drier and drier; at the time the agitation and restlessness ceased, it was covered, as also the teeth and lips, with black crusts; the abdomen was at no time tympanitic; nothing particular in the stools; the pulse constantly remained very frequent, and became very small and weak; during the last forty hours of life we reckoned it to be 146. Up to the time of death the trunk presented traces of erysipelas, which had successively traversed every point of it.

Post mortem. The meninges were pale, traversed with some veins half filled with blood. Lungs engorged posteriorly; healthy in every other part; and the arteries and veins were white on their inner surface.

The mucous membrane of the stomach a little mamillated towards the pylorus, presented towards its posterior surface, near the cardia, a very light red dotting; everywhere else it was perfectly white, and was neither softened nor indurated. The duodenum presented a greyish tint. In the jejunum and ileum nothing was observed but a number of veins filled with blood, which passed beneath the mucous membrane, which was pale through its entire extent, excepting some convolutions, which occupied a descending position. There was not a follicle apparent throughout all the small intestine.

The cæcum was a little injected; the rest of the large intestine was white.

The redness of the skin of the back, abdomen and upper part of the thighs was gone; here and there we observed on this skin some large phlyctenæ filled with reddish serum.

There can be no doubt that the erysipelas was, in this case, the occasional cause, or, if you will have it, the starting point of the ataxo-adynamic symptoms in which the patient died. The vast extent of skin attacked by inflammation, was sufficient, without any other organ participating in the disease, to occasion serious disturbance to the nervous system. Thus, without any alteration of the digestive passages, the tongue may become dry and black; without this alteration, typhoid symptoms may be developed. We have been careful to note that the vessels were found in the most healthy state, an important circumstance, because it might be supposed that the erysipelas had produced these symptoms only after being complicated with phlebitis.

CASE 35.—*Phlegmon terminating in gangrene around scarifications made on an infiltrated limb; adynamic fever; tongue and teeth dark-coloured; fæces passed involuntarily—Digestive tube healthy—Organic affection of the heart.*

A man, fifty-three years of age, presented all the signs of dropsy from organic affection of the heart, when he was submitted to our inspection. A few days after his admission, the enormous size of the lower extremities induced M. Lerminier to scarify them; the left extremity was soon emptied, but not so with the right; the thigh and leg of this side soon presented, around the points of the skin where the incisions had been made, a livid red colour, which soon became black; at the same time there was considerable tumefaction of the limb, general redness of the skin of the thigh, acute pain on the least pressure (emollient fomentations). During the three or four first days the general state of the patient remained good; but after this, and according as the phlegmon went on, the features underwent a rapid alteration; a very well-marked expression of sinking was observable on the face; the mouth was filled with a viscid, clammy mucus, of a dirty grey colour; then the tongue became brown, and dry as a bit of parchment; black crusts covered the teeth; the intellects became disturbed; the patient ceased to answer questions; he was continually muttering some unintelligible words; and he died in this state twelve or thirteen days after the scarification had been made.

Post mortem seventeen hours after death. Considerable serous engorgement of both lungs; a clot of some consistence, and of a yellowish white colour, in the heart, which was aneurismatic, its tissue being rather healthy, and the inner surface being pale. A little coagulated blood in the large arterial trunks, which presented no unusual colouring, nor did the veins. A considerable quantity of pus infiltrated the cellular tissue of the right lower extremity.

In this case the adynamic symptoms, the dryness of the tongue, the dirty colour of the teeth, and the delirium came on in consequence of the phlegmon. We have adynamic fever without the digestive tube presenting any appreciable lesion after death.

Case 36.—*Inflammation of one of the kidneys and of the bladder—Symptoms of adynamic fever—Tongue dry and black; teeth dark coloured—Digestive tube healthy—Spleen large and soft.*

A man, about sixty years old, was brought to the Charité in the following state: face of a leaden hue; will not answer questions; constant muttering; lips, teeth and tongue, covered with a dark coat; some petechiæ on the abdomen, which was soft, and seems free from pain; stools natural; pulse small, very frequent; skin not hot; subsultus tendinum. The two following days the individual remained nearly in the same state. He died on the third day.

Post mortem. Brain healthy; lungs slightly engorged; heart empty; nothing remarkable observed in the stomach; the right kidney of a deep red colour, and its tissue very friable; the calices, which were considerably dilated, were filled with purulent matter, which was also found in the ureter of this side; the bladder, which was contracted on itself, presented an unusual thickness of the cellular tissue interposed between the muscular and mucous coat; in some points this cellular tissue had a schirrous appearance; the entire mucous membrane of the bladder was of a cherry red colour; the spleen very large and very soft.

In this case we find the digestive tube as healthy as in the preceding: yet the adynamic fever was here well marked. It commenced in an affection of the urinary passages. Those who have seen a certain number of cases of chronic disease of the urinary passages, know that it is not uncommon to see life terminate in such patients in the midst of symptoms of adynamic fever; their strength is lost, their intellects become impaired, their tongue dries, and they die.

Case 37.—*Old attack of apoplexy—On entering the hospital, general debility; soon after there was intestinal hemorrhage; then adynamic symptoms; tongue dry and black—Death—Abscess in the prostate; another abscess in the thoracic muscles—Digestive tube presenting no other lesions except a little redness in the great cul de sac of the stomach—An old hemorrhagic focus in a cerebral hemisphere.*

A coppersmith, fifty years of age, had an attack of apoplexy. He lost consciousness for several hours; when he came to himself, his extremities on the right side were paralysed; the right commissure of the lips was drawn down; the tongue inclined to the right. He was bled profusely, and covered with sinapisms and blisters. The paralysis terminated at the end of about five weeks.

When he entered the hospital, he complained only of general debility. We observed him gradually to fall into that state of decay which the ancients designated by the name of *cachexy.* His face was very pale; he was so weak that he could not leave the bed ; his movements were free, his intellect intact. At the commencement of March he voided, without pain or tenesmus, a considerable quantity of blood by stool ; he then had a slight purging, which yielded to rice ptisan. Fever became developed. He began to feel pain at the lower part of the right side of the chest.

March 12, tongue dry, red at the centre ; thirst ; abdomen free from pain ; pulse frequent and weak ; prostration.

The same state on the two following days. Constipation. (Decoction of polygala.)

On the 15th, tongue dry and black ; some thirst ; no stool ; intellects very distinct ; speech free ; pulse frequent, rather resisting ; continuance of the pain of side.

On the 16th, features very much altered. Died the next day. Intelligence perfect to the last moment.

Post mortem. Effusion of a considerable quantity of limpid serum into the sub-arachnoid cellular tissue. Ventricles filled with serum. Externally, and on the level of the left corpus striatum, there existed an oblong cavity, about one inch in length and two in depth, and from three to four lines in width, filled with a small quantity of a chocolate-coloured liquid, lined by a thin smooth membrane, resembling a serous membrane. Cerebellum softer then usual. From the right lung, when cut into, an enormous quantity of colourless frothy serum flowed (œdema) : there was less of it in the left. Considerable hypertrophy of the parietes of the left ventricle of the heart. The inner surface of the stomach was white through its entire extent, except towards the great cul-de-sac, to the extent of three fingers' breadth in every way. Here there was considerable redness, which resided in the mucous membrane, which was a little softened, but still, however, capable of being raised in the form of membrane. The inner surface of the rest of the intestine, from the duodenum to the rectum, was very white, except in some scattered points, where there was slight sub-mucous injection.

A small purulent deposit was found in the substance of the thoracic muscles of the right side ; thence the pain felt at this part.

We do not think that the state of the digestive tube can here account for the symptoms observed during life. Thus, again, there was in this case adynamic fever, with dryness and blackness of the tongue, with an origin elsewhere than in the digestive passages.

Shall we remark the hypertrophy of the left ventricle of the heart, by which the resistance which the pulse presented up to the last moments may be explained, a resistance which seemed to disagree with the aggregate of the other symptoms? Shall we again remark the non-cicatrisation of the old apoplectic focus, though every species of paralysis had for a long time disappeared

CASE 38.—*Red softening of the liver ; no other lesion—Adynamic fever.*

An old man, nearly eighty years of age, entered the Pitié in the following state : face pale, with a yellowish tint around the lips and alæ nasi ; a marked air of stupor ; such debility that the patient cannot remain sitting up for a few seconds ; intelligence very much impaired. The tongue protruded from the mouth with difficulty and tremor ; a yellow crust covers its centre, and its edges, as well as its apex, adhere to the palate and teeth by a thick and viscid mucus. Abdomen soft and free from pain ; stools but few. The upper extremities were affected with a constant tremor, which at first prevents the pulse from being felt ; when it is felt, it is found to be small, irregular, and very frequent. Skin hot and dry ; movements of respiration separated by very unequal intervals, and it was observed to be accelerated and retarded alternately in a very remarkable manner.

All that we could learn of his previous history was, that, for the last fifteen days, this old man kept the bed; that first he lost his appetite and strength, and that gradually he fell into the state now described.

On the following days the prostration increased more and more; the patient fell into a sort of dull delirium, which rendered him completely indifferent to all external impressions; the tongue, teeth, and lips, became black; the pulse, without losing any of its frequency, became thready; the skin became cold; the breathing was embarrassed; and he died in about twenty days after he began to keep his bed.

Post mortem. Slight serous infiltration of the subarachnoid cellular tissue of the convexity of the cerebral hemispheres. Meninges pale; about half a spoonful of limpid serum on each lateral ventricle. Substance of the brain equally pale as the membranes.

Old adhesions of the pleuræ costalis and pulmonalis of the right side; considerable rarefaction of the pulmonary tissue; engorgement of the two lungs at their posterior part. Towards the summit of the left lung several burst, or dilated vesicles, formed, as it were, large ampullæ, which passed some lines beyond the exterior surface of the lung; immediately at the summit, they surrounded, to the number of five or six, a depression resembling a cicatrix. In some points of the two lungs the bronchi were found considerably dilated. The entire pulmonary parenchyma was loaded with a great quantity of black colouring matter.

The cavities of the heart were filled with coagulated blood. Considerable ossification of one of the aortic valves. The aorta also contained several plates of bone.

The stomach was filled with a greyish liquid which exhaled an acrid odour. Its mucous membrane was everywhere pale; it was very thin towards the pylorus. The villi of the first curvature of the duodenum were coloured black. The remainder of the small intestine was pale. No trace of follicles, whether isolated or aggregated, were discovered in it. The cæcum was a little injected.

The liver, which was of the ordinary size, presented a uniformly red colour, but, what was particularly remarkable in it, was the extreme friability of its tissue, which crumbled under the finger with extreme facility. A black and pitchy bile distended the gall-bladder. Spleen somewhat large and very soft.

This case furnishes matter for the same reflection as the preceding; it is always typhoid symptoms which are developed, without any concomitant lesion of the digestive passages. The liver was here the primary source whence the symptoms were derived; at least, it was in this organ only that any alteration was discovered.

CASE 39.—*Measles—On the second day of the eruption violent delirium, followed by a state of coma—No appreciable lesion in any of the organs.*

A man, about twenty-eight years old, of strong make, entered the Pitié with intense fever, accompanied with a very violent cough and coryza. Face red; eyes injected and watery; tongue of a bright vermilion colour; abdomen everywhere soft and free from pain; no diarrhœa. Percussion of the chest gave but negative information; auscultation detected a little mucous râle in different points. This man had a cough for the last eight days, but only since the last two days had he any fever, and kept his bed. We bled him to sixteen ounces. Blood not buffed.

During the twenty-four hours following the patient remained in the same state; then his skin became covered with an eruption, having all the characters of the best marked measles. At first everything seemed to go on very well; then thirty-six or forty hours after the rubeolar eruption first began to appear, the intelligence became suddenly disturbed, and furious delirium soon set in. We had to put the strait waistcoat on him. He was very much agitated, vociferated incessantly, and railed at every person who approached him. Frothy saliva constantly flowed from his mouth; he greedily swallowed whatever liquids were presented to him, and constantly importuned for something to drink; tongue, however, neither red nor dry. From time to time the trunk was suddenly raised, as if by a tetanic shock. Continued subsultus was perceived, which prevented us from clearly ascertaining the character of the pulse. We, however, satisfied ourselves that it was very frequent and very full. The eruption was still very marked on the face and chest; it had disappeared on the extremities. Forty leeches were applied to the neck, and, whilst the blood was flowing, the lower extremities were covered with sinapisms.

For three days the same state continued; a second application of leeches was made with as little success as the first. After this the scene suddenly changed; the violent excitement which the patient presented up to this period was all at once succeeded by extreme prostration; profound coma soon came on, in which the patient died.

Post mortem. On the inner surface of the stomach we observed some bands extending from the cardia to the pylorus; the free edge of some presented a red colour, which partly disappeared, and became changed into a light red narrow dotted streak,when these bands were effaced by traction. Some partial injections observed in the intestines. Nothing remarkable in any of the other organs.

If there be a case where the alterations discovered by our senses do not appear sufficient to explain the disease, and to account for death, that is unquestionably the case now read. In most of the cases wherein measles is complicated with such serious symptoms, we find on the dead body alterations which we rationally consider to be the cause of them. Here all the organs were healthy. Might it not, however, be presumed that traces of inflammation would be found in these nervous centres where the principal and most important of the functional disturbances resided? yet they were as exempt from lesion as the other parts. What share had the cutaneous eruption in this case? Certainly none other than that of exciting to action the predisposition to the development of nervous symptoms in consequence of the general disturbance of the system. Here, then, as in a thousand other cases, that which appears to us is but part of that which is, and that which we do not see is precisely that which is most important.

Case 40.—*Confluent small-pox—On the ninth day of the eruption typhoid symptoms; tongue black; petechial spots between the pustules; delirium.*

A young servant girl, eighteen years old, went frequently, seven days before she fell ill, into the bedroom of a person who had small-pox. She had not been vaccinated. She entered the Pitié on the 9th of August. She first complained, on the 30th of July, of general sickness and anorexia. August 1st, she complained of dizziness of the head, nausea, and she vomited. On August 2nd, the same symptoms; pains in the region of the kidneys; she kept her bed. August 3rd, no more vomiting nor nausea, but was very weak, and did not leave the bed. August 4th, in the morning, the face was observed to be covered with pustules (boutons). The eruption went on developing itself up to the 10th of August, the time we examined the patient. This was the seventh day, when she was covered with the eruption.

The entire skin was covered with numerous pustules, which constituted everywhere a most confluent eruption. These pustules were white, flattened, and several of them umbilicated. Between them the skin was of a bright red colour on the face and upper extremities. She complained of no other pain than a general smarting of the skin; the pain in the region of the kidneys was gone since August 3rd. No headach. The tongue was covered with a yellowish coat; it was moist, and without redness on its edges; some pustules were observed on it. She complained of a bad taste in the mouth; profuse salivation; the palatine arch and velum palati were covered with pustules. Since the first day of the eruption the patient complained of the throat; voice completely extinct; she had no cough; was tormented with great thirst; abdomen soft and free from pain; no stool for the last three days; passage of urine accompanied with great smarting; pulse 120; twenty-eight respirations per minute. (Infusion of mallow flowers; mucilaginous potion; diet.)

On the 11th, same state. The skin of the chest was intensely red in the interval between the pustules; these ran one into the other on the thighs, forming as it were large ampullæ, filled with a whitish liquid. There was profuse salivation.

Up to this, notwithstanding the confluence of the eruption, every thing went on very well. But, August 12th, the ninth day of the eruption, some delirium supervened. On this day it still appeared only at intervals; the patient appeared very much debilitated.

August 13th, tenth day of the eruption, the delirium was constant; some blood escaped from the opened pustules, and the face was covered with a black mask. Breathing very much hurried; pulse 140. The tongue was dry, and covered with black crusts. The constipation still continued. The legs were covered with large violet spots, the only point of the body where intervals were observable between the pustules (Continuation of diluent drinks.)

The delirium continued through the day; the general prostration increased; yet, in the evening, in the midst of her delirium, the patient left her bed, and walked for a little about the ward. She died on the 14th, the eleventh day of the eruption, at three o'clock in the morning.

Post mortem twenty-nine hours after death. The tongue, palatine arch, velum palati, and pharynx, were covered with a thick white coat. The mucous membrane beneath it was but slightly red; inner surface of the stomach lined by a yellowish mucus; beneath it the mucous membrane was found of a greyish white colour, and mamillated through nearly its entire extent; slight injection in some points of the great curvature. In no part was it softened. The mucous membrane of the duodenum was greyish like that of the stomach. Some parts of the jejunum and ileum were of a livid red colour, the parts particularly in the cavity of the pelvis. Everywhere else the intestinal mucous membrane was white. In the two last feet of the ileum a considerable number of Brunner's follicles were found to be white, and not at all prominent: in the ileum also were found five of Peyer's patches, forming no projection above the level of the mucous membrane, which were recognisable only by their black points, and the greyer colour of the intestine where they were found. The mucous membrane of the large intestine was everywhere white and of good consistence; no follicles observable in it.

The liver, which was of a uniform pale red colour, was rather friable; the gall-bladder contained a black thick bile.

Both lungs were very much engorged posteriorly, and in some points, always posteriorly, they contained no air. The mucous membrane of the larynx and trachea was intensely red. Some reddish serum was effused into the pericardium. The heart, the tissue of which was firm, contained blood partly liquid and partly coagulated.

The slight alterations found in this individual existed all, with the exception of the pulmonary engorgement, at the time the small-pox was proceeding, without being complicated with typhoid symptoms. What was the cause of these? We think that, if we had had the opportunity of examining the organs the day before that on which the delirium set in, we should have found them in the same state as that in which we found them some days later. What, then, was the new morbid element which intervened to stamp, all at once, so unfavourable a character on the disease? Was it merely a sympathetic influence exercised by the inflamed skin on the nervous centres? Such may be supposed; it cannot be proved. Was it the variolic virus, which, after having exhausted its action on the skin, then directed its deleterious influence towards the two grand movers of life, the blood and nervous system? This is but an hypothesis, which, however, might have more than one analogy in its favour. Did the inflammation of the skin produce a phlebitis consecutively? But, with respect to this phlebitis, which may happen in certain cases, we in vain sought for it in this, and we also satisfied ourselves that it had not attacked the lymphatic system. Lastly, were these typhoid symptoms, so suddenly developed, the result of a purulent absorption? Nothing here proves it; whilst, on the contrary, it is to be presumed that this absorption took place in the following case:—

Case 41.—*Confluent small pox—On the ninth day, sudden sinking of the pustules; death rapidly supervening.*

A man, about thirty years of age, entered the Pitié with confluent small-pox. Up to the ninth day of the eruption everything went on very favourably; no particular symptom presented itself, only the tongue was very much swollen.

On the ninth day, the pustules, which, the day before, were fully suppurated, became suddenly depressed; *they became emptied without being opened;* between them the skin became pale as the skin of a corpse. In the course of the day some delirium supervened; at night the patient fell into a state of extreme prostration; the pulse was no longer felt. He died in the course of the night.

Post mortem thirty hours after death (6th of May, low temperature).

The examination of the pustules showed that they were all empty, with the exception of two or three situate on the back of the foot; the epidermis, as it were puckered and wrinkled, was in immediate contact with the cutis. In the point where the pustules were, this cutis was red and a little swollen; everywhere else it was pale.

The encephalon and its appendages presented no appreciable alteration.

The inner surface of the larynx and trachea was red; the lungs healthy, slightly engorged posteriorly; one of them contained a small cretaceous tubercle at its apex; the blood contained in the heart and aorta was liquid; the inner surface of the aorta was red; nothing remarkable in the vascular apparatus.

The pharynx and œsophagus healthy; the inner surface of the stomach presented, through its entire extent, as far as the great cul-de-sac, considerable mammillation; it was everywhere of a greyish white, without the least trace of injection; the small intestine generally pale; its inner surface was studded with a very great number of Brunner's follicles, which were not more coloured than the mucous membrane on which they were raised; towards the end of the ileum we also found several of Peyer's patches, which had a greyish tint, but which did not project above the level of the mucous membrane; the large intestine was white, without any apparent follicles; the spleen was one-third larger than ordinary; it was pale and very soft.

The most prominent phenomenon presented in this case was the sudden depression of all these pustules, which became all at once emptied of the liquid which filled them, without having been previously torn. They did not therefore discharge externally the pus secreted by the cutis; it was the latter which re-absorbed it; and must it not then have passed into the torrent of the circulation? We did not, to be sure, find this pus either in the blood or elsewhere, but the reason is, because being intimately mingled with it, and circulating with it molecule by molecule, it had not yet had time to separate from the blood, when death supervened. Death struck the patient with frightful rapidity; the depression of the pustules was followed by the development of terrible symptoms, similar to those of poisoning by some septic agent, and very few hours elapsed between the appearance of these symptoms and death.

CASE 42.—*Confluent small-pox—From the ninth to the fourteenth day of the eruption, typhoid symptoms became gradually developed—Death on the fourteenth day—Numerous abscesses in the lung and in the cellular tissue of the deep region of the neck—Intense redness of the mucous membrane of the digestive passages.*

A man, twenty-one years of age, entered the Pitié 18th of August. He had fallen sick on the 14th. On the 13th he had gone to bed very well, and slept well. On the 14th, when he awoke, he felt an acute pain in the kidneys; took to his bed; still ate; did not vomit. On the morning of the 16th the eruption appeared on the face, and was increased on the 17th. On the 18th, the day when we first saw him, the eruption was general, confluent, and developed, as it should be on the third day. The pain of the kidneys disappeared since the 16th; tongue white and moist; the palatine vault and velum palati were covered with pustules; no salivation; some pain in the throat since the last few hours; no thirst; pulse 64. (Mucilaginous drinks; diet.)

August 19th, the fourth day of the eruption, some pustules covered the tongue; its appearance not changed; a little delirium at night; pulse now 72; respirations 16 per minute.

August 20th, fifth day of the eruption, he complained much of his throat; voice entirely gone; tongue covered with pustules; only one stool; calmer at night than on the preceding; frequency of pulse a little increased, being now 76; respirations 24.

During the four days following, the intelligence became disturbed from time to time, and in a moment of delirium he tore the pustules from his face.

August 25th, tenth day of the eruption, the delirium became more continued; extremities exhibited slight convulsive movements; they, as also the trunk, were covered with pustules filled with pus; the entire face covered with a black mask; eyes easily opened; tongue dry as a bit of parchment; voice still entirely extinct; pulse 100.

Up to the 29th the delirium still continued, as also the occasional involuntary movements of the limbs; the tongue now covered with black crusts. On the 29th he died at nine o'clock at night, this being the 14th day of the eruption.

Post mortem. Pia mater infiltrated with a little serum; a very small quantity of it in the ventricles. The muscles of the neck were separated, and, as it were, dissected one from the other by means of pus, which infiltrated the cellular tissue placed between their fasciculi. Some pus was also found effused between the œsophagus and vertebral column.

The stomach was dilated with gases. Internally there were observed bright red dots, which were all seated in the mucous membrane, and particularly in the villi of this membrane. The inner surface of all the small intestine, and that of the upper half of the large intestine, was of an intensely red colour. Some solitary follicles, somewhat numerous, but small, were found towards the termination of the ileum. Spleen enlarged in size, and very soft.

The mucous membrane of the larynx was very red.

Both lungs were very much engorged posteriorly. The lower lobe of the left lung had a sieve-like appearance, in consequence of a multitude of small abscesses. Every incision made by the scalpel fell on several of the abscesses, so numerous were they. Some were surrounded by a perfectly healthy parenchyma; around several others the pulmonary tissue was hepatised. In a certain number of points there were found, instead of abscesses, small greyish masses, still hard, which were evidently portions of the pulmonary tissue infiltrated with pus. The upper lobe of the left lung contained nothing similar. In the right lung there was discovered only a single point where the tissue of this organ contained a little pus, which was still found in the state of infiltration.

The bronchial ganglions were somewhat enlarged, but they presented nothing remarkable, except that some of them contained a little chalky matter.

Some lemon-coloured serum was found in the pericardium.

In the preceding case the serious symptoms, which were suddenly developed at the same time that the pustules became depressed, were a reason for our admitting purulent absorption ; while, in this case, none of the lesions found on the dead body could account for these symptoms.

Here the pustules remained full up to the time of death, except those on the face, which were prematurely torn. We still observe the same symptoms, but more slowly developed. How shall we explain them? There were here two species of lesions ; on the one hand, we discover a well-marked gastro-enterite, and it alone may, no doubt, have had great influence on the production of the typhoid symptoms ; but, on the other hand, we find in the cellular tissue of the neck, and particularly in the lung, numerous abscesses, altogether resembling those found in the same parts after capital operations, and which have been hitherto accounted for either by an absorption of pus, or by a phlebitis. Here this latter did not exist.

Wherefore, we think that, in this patient, the typhoid symptoms were owing, at one and the same time, to the absorption of pus and the gastro-intestinal inflammation.

We shall now cite another case, in which the same typhoid symptoms still appear, without there having been any other lesion than an intense inflammation of the pulmonary parenchyma.

CASE 43.—*Confluent small-pox—Typhoid symptoms developed on the twelfth day of the eruption—Death on the sixteenth day—Pneumonia.*

A man, twenty-one years of age, ran through the different stages of confluent small-pox, without any unpleasant circumstances up to the twelfth day of the eruption. Then the pustules of the face became changed into yellowish crusts ; those of the extremities were still full of pus. All at once the frequency of the pulse increased ; the tongue became dry, the intellects disturbed, and at the same time the breathing was accelerated ; auscultation detected some crepitous râle towards the base of the right lung ; there was scarcely any cough, no expectoration, and no pain of side. He was immediately bled to the amount of sixteen ounces ; still the symptoms became worse ; on the one hand, without the respiration appearing to be more impeded, the crepitous râle was replaced by bronchial respiration ; and, on the other hand, the dryness of the tongue, the delirium, stupor, and the prostration, went on increasing. All this continued for fifteen days, then the patient died. From the moment these new symptoms set in, the eruption underwent a remarkable change. Some of the pustules became depressed without having been previously torn ; others, in much greater number, were filled with blood.

Post mortem. On the inner surface of the larynx, between the two anterior extremities of the chordæ vocales, there was found a small ulcer, which seemed to be the probable result of the laceration of a pustule ; slight redness of the mucous membrane of this organ ; this redness more intense in the trachea and bronchi. The inferior lobe of the right lung in the state of red hepatisation. The mucous membrane of the stomach presented a multitude of intensely red points. The small intestine in general but slightly injected ; we observed on its lower fourth about fifteen of Peyer's patches, of a greyish white colour, projecting a little above the mucous membrane. Between these patches were found several of Brunner's follicles, of a white colour, and small in size. Spleen very large and very soft.

The pneumonia, which complicated the variola here, was evidently the commencement of the typhoid symptoms; they began and increased along with it. The change which the pustules underwent, from the moment these symptoms appeared, we consider very remarkable. In this case, as in all the others, the spleen was found large and soft. In the midst of organic disturbances so varied, which we observed to coincide with the typhoid state, this alteration of the spleen is the most constant lesion. It is, however, sometimes wanting.

CASE 44.—*Puerperal metritis, with partial peritonitis—Ataxo-adynamic symptoms.*

A woman, twenty-three years of age, was safely delivered of her first child in the Maternité. A few days after her delivery she left the house; but she had scarcely reached her own home when she was seized with a great shivering, which was succeeded by a burning heat, and at the same time she felt in the hypogastrium acute pains, which were increased by any motion whatever. Twenty leeches were immediately applied over the abdomen; still the symptoms did not diminish, and, three days after their invasion, this woman was admitted into the Pitié.

The pain about the hypogastrium was then diminished; she scarcely felt it when she remained lying on her back; in this position she complained particularly of suffering very much in the region of the kidneys. Gentle pressure on the abdomen, from the umbilicus to the pubis, gave but little pain; when extended to the iliac regions, a more acute pain was produced. We readily felt in the hypogastrium a globular body, not very moveable, which rose full three fingers' breadth above the pubis. The form of this body, its position, and its relations, at once showed that it was the uterus which, after the accouchement, had attained an unusual size. There was a reddish white discharge at the vagina; on introducing the finger it was ascertained that the neck of the uterus was swollen, softish, hot, and very painful to the touch; its orifice was still sufficiently open for the extremity of the index finger to be able to penetrate into it a considerable way. The febrile disturbance was intense; the pulse, which was easily compressed, was up to 132, and the skin was hot and dry; respirations twenty-eight per minute. The tongue, covered with a yellowish coat, was clammy to the touch. She complained of great thirst; she had nausea the day before, which was now gone; she had had no stool since her accouchement. She also felt general uneasiness and inexpressible anxiety, though her pains were not acute. She constantly stated that she had not the command of her ideas; that she knew not what was to become of her; she found herself extremely weak: countenance was pale, and her features expressed great depression.

It seemed evident to us that this woman had acute metritis. This affection alarmed us less than the state of the nervous system, and the expression of her countenance. It appeared that typhoid symptoms were about to manifest themselves; perhaps it was a case of uterine phlebitis; perhaps, too, pus was already circulating with the blood. We put these questions to ourselves, and, considering the paleness of her face, her sunken features, the well-marked nervous anxiety, the weak and compressible pulse, we doubted the propriety of blood-letting. Still there was intense inflammation of the uterus; this inflammation was recent, and it was natural to think that, by combating the local affection, and removing it, we might give the nervous system more chance of returning to a better state. We ventured, therefore, to apply thirty leeches over the hypogastrium; we advised emollient fomentations to be kept continually over the abdomen; and we ordered a simple lavement of marshmallow to relieve the constipation which existed. Internally, gum water was the only drink prescribed.

The leech bites bled very profusely. On the next day the patient was far from being improved. The tongue was now completely dry; the countenance indicated the most profound stupor; it was of a most remarkable leaden hue. Her ideas were no longer clear; she uttered from time to time words without meaning;

if we asked her how she found herself, she replied that she was very well—a fatal sign of a profound perversion of sensibility. Her upper extremities were agitated by a constant tremor ; the skin retained some heat ; and the pulse, smaller than on the preceding day, was up to 140. The respiration was remarkable for its great irregularity, being sometimes very much accelerated, sometimes singularly slow. Amidst these great disturbances of innervation, the state of the uterus did not seem to undergo any change ; the abdomen might be rubbed without the patient evincing any pain.

Thus the typhoid state, which we doubted the day before, was now strikingly marked. Should we here be content with a merely expectant mode of treatment? We did not think so. We thought that the great indication in this case was to recruit the strength, and we prescribed a mixture, consisting of thirty drops of sulphuric ether and two drachms of dry extract of quinquina ; we gave at the same time a lavement, in which we dissolved twenty-five grains of sulphate of quinine (the entire to be given in two demi-lavements) ; we also ordered cataplasms of linseed meal, very hot, and sprinkled over with some flour of mustard, to be applied to the lower extremities. We ordered, for ordinary drink, some vinous lemonade.

This new mode of treatment at first seemed to be followed by some success ; the day after, in fact, the state of sinking seemed to be diminished, the tongue was not so dry, and the intellect seemed to be improved. But this apparent amendment was but of short duration. During the four following days, though the same treatment was continued, the adynamic state progressed ; the tongue and teeth were covered with black crusts ; she raved continually. Totally unconscious of everything passing around her, she uttered, from time to time, some unintelligible words. She soon fell into a profound coma, in which she died.

Post mortem. Nothing particular observed in the brain or its appendages. The thoracic organs exhibited nothing worth noticing, except considerable engorgement of both lungs posteriorly. Some blood, partly liquid and partly coagulated, was contained in the cavities of the heart. The stomach presented, to the left of its cardiac orifice, over a space about as large as a five franc piece, a slightly red dotted appearance. Everywhere else the gastric mucous membrane was pale, and of natural consistence. The duodenum was of a slate-coloured tint. Over the rest of the intestine we found nothing but some arborisations scattered here and there, which interfered not with the transparence of the mucous membrane, and which were beneath it. The spleen was one-third larger than natural, and very soft ; a small stream of water poured on it was sufficient to reduce it quickly to its fibrous parenchyma. The uterus went about three fingers' breadth above the upper edge of the pubis. Its cavity, which was larger than natural, was filled with purulent mucus, white in some points, reddish in others. The membrane lining the parietes of this cavity was intensely red, and covered in some places with a whitish layer. Even the tissue of the uterus, which is usually so hard, was become so friable, as to break under the pressure of the finger. This tissue was everywhere of a livid red colour ; we have nowhere met the least appearance of pus. The right ovary was larger, redder, and more friable than the left. It contained no pus. A sero-purulent liquid was effused into the cavity of the pelvis, and both sides of the uterus were covered with whitish false membranes. No lesion of either the arteries, veins, lymphatics, or their glands.

Here, again, is a case where the typhoid symptoms have an entirely different commencement from that which they had in the preceding cases : here it is the uterus, whose inflammation carries into the nervous system that very peculiar disturbance which produces the ataxo-adynamic state. The particular condition in which the woman was during and after her accouchement, particularly in her suffering both mental and bodily distress, appears to us eminently calculated to favour the development of this state. This case also proves that the existence of uterine phlebitis is not indispensable, as some persons suppose, for the production of the typhoid state in women attacked with puerperal metritis. We can even say that, in a considerable number of cases of this kind which we observed at the Maternité, there were very few in whom we detected the existence of phlebitis. The following, however, is a case in which the inflammation of the veins had very probably a considerable share in the production of the typhoid symptoms.

CASE 45.—*Gangrene of the lower lip ; pus in the veins—Abscess in the lungs—Soft state of the spleen—Adynamic symptoms ; tongue dry and black.*

A woman, thirty-nine years old, was brought to the Charité on the evening of the 16th of August. She presented a gangrenous eschar of the lower lip. The following is the history of the case, both as obtained from herself, as also from MM. Piédagnel and Merat, who attended her before her admission into the hospital.

This woman, who was in very good health, and who even suckled a child for the last eighteen months, went the preceding Sunday to walk in the Champs Elysées, on which occasion she was stung in the lower lip by a fly. She stated this fact positively, but she could not say what sort of fly stung her. The lip became swollen up on Tuesday, when M. Piédagnel was called in. He ordered fomentations and leeches. He himself observed on the lower lip a white triangular mark, similar to a leech-bite. The swelling increased : M. Merat was called in on Friday. He recommended cauterisation with caustic potass, which was done. In the night some delirium manifested itself. At last she was removed to the Charité. There, the swelling not ceasing to gain ground, the pulse being rapid and weak, we determined on another cauterisation with caustic potass, having first divided the eschar. (Decoction of quinquina.)

On the 17th the eschar on the lower lip was about an inch broad, and was raised with pus : an indolent swelling of the two cheeks, particularly on the right side of the chin, neck, and even the upper part of the chest. A purple red colour, which disappeared on pressure ; no inflammatory circle marking a separation of the gangrene, the swelling was rather œdematous than tense. Debility, anxiety, pulse frequent, and had but little strength. More delirium, no headach ; intense thirst, no heat of skin ; abdomen soft, and free from pain ; a little diarrhœa ; sonorousness equal on both sides of the chest, but a mucous râle on the left, a difficulty of expectorating by reason of the viscidity of the sputa. (Thirty leeches to the neck, vinous lemonade ; three semi-lavements, with the decoction of quinquina and six drachms (gros) of camphor.)

At noon the blood flowed profusely. Pulse quicker and smaller than in the morning ; great anxiety ; swelling increased. In the evening she refused to drink ; she fell into a state of inexpressible anxiety ; she appeared suffocating ; wished to throw herself out of her bed. Her throat and mouth became filled with a thready and tenacious mucus, which we could not get rid of.

On the 18th she raved all the night ; the swelling made some progress towards the chest ; tongue appeared dry and black. Pulse nearly gone.

She died at one o'clock in the afternoon.

Post mortem.—The eschar being divided, it was found to contain pus beneath it and to include nearly the entire substance of the lower lip. On dividing the tissues, a number of small abscesses were found ; sometimes the pus seemed to flow from the gaping orifice of small vessels. On further examination, it was ascertained that the right facial vein was swollen beyond measure, and that in some places it contained pus, in others a reddish sanies ; it was found also to be thickened and red ; and these different alterations, as well of the vessel as of the contained liquid, extended as far as the great angle of the eye, and to the right facial vein ; the same lesions were found in the left facial vein, but they did not extend to so great a height; on pressing the small veins which opened into these vessels, pus escaped from them. The right jugular vein was filled with it; it was thickened and red through its entire extent. One of the thyroid veins on the left side was in the same state. The left jugular vein was in its normal state. All the large veins in the upper part of the body were distended by clots of blood. An abscess, whose existence was not at all suspected, was found between the pectoralis major and minor of the right side. It did not communicate with the abscesses of the face.

The brain was in its normal state, except that there was some injection observable.

The left pleura was inflamed; a small purulent effusion was found in it; soft pseudo-membrane of recent formation lined the lung, and caused it to adhere to the ribs. The left lung presented a great number of abscesses in different states. Some were found in all its lobes, but principally at the upper part, in the middle of its parenchyma, and immediately under the pleura. Some as yet presented merely a sanguineous mass; in others some pus was mixed with the blood; in others again nothing but pus was observed. In other parts these latter presented sometimes white pus of a good consistence, sometimes reddish, sanious pus, similar to the liquid found in some veins. Old adhesions were observed on the right lung. A very small number of abscesses similar to the preceding were found in it.

The bronchi were red and filled with mucus. Heart large; its right cavities contained some fibrinous clots. The spleen was partially softened, and reduced to a putrid substance, similar to the sanies of the veins. The uterus was large, and contained a clot of blood. (This woman had been menstruating.) The ovaries were large and flattened. The right presented a very well developed yellow body, and in the midst a small sanguineous mass. The bladder was distended with urine.

This case resembles several others of which we meet numerous instances in the surgical wards of our hospitals. There it is not uncommon to see patients die after more or less severe operations, with these same ataxo-adynamic symptoms, of which the preceding cases furnished us such varied instances; and further, we frequently see their entire skin covered over with a yellow tint. On opening their bodies, the veins proceeding from the place where the operation took place are found to be inflamed and full of pus; this phlebitis can be traced to a greater or less distance, and at the same time collections of pus are found in several parts, as the lungs, brain, liver, and spleen; they are also met with in the articulations and in several points of the cellular tissue.

Hitherto we have seen the typhoid phenomena become developed only in consequence of acute diseases, which had in some measure attacked the system suddenly. It may, however, also happen that these phenomena mark the termination of a certain number of chronic affections, which have gradually impoverished the blood and exhausted the innervation. The typhoid state which then supervenes is but the ultimate expression of this influence slowly exercised; in this way some persons die who have been affected with organic lesions of the most varied character; in this way again several old men die who have remained hemiplegic after an attack of apoplexy. We shall here cite only one instance of this kind, which is remarkable in several other respects.

Case 46.—*Symptoms of adynamic fever in a woman who, several months before, had undergone amputation of a cancerous breast—Cancerous masses in several organs.*

A woman, forty-seven years of age, entered the Charité in the following state. Great prostration; dulness of intellect, and soon after complete delirium; countenance pale, and, as it were, of a leaden hue. Lips and teeth black, tongue very dry, and covered with black crusts ; a little tympanitis of the abdomen ; no diarrhœa. Pulse small and very frequent ; tremor of the upper extremities the moment the patient attempted to move them ; subsultus tendinum.

The patient began to keep her bed about fifteen days before entering the hospital, and she gradually reached the state which we have just now described. Some tonics were administered without any success. The prostration went on increasing ; a large eschar formed on the sacrum, and she died in about two days after her admission into the hospital.

Post mortem.—In the place of the amputated breast there was found a healthy cicatrix, beneath which no accidental production was observed. The other breast was not diseased. On the side of the amputated breast, there were found in the axilla some lymphatic ganglions enlarged in size, and of a lardaceous tissue.

This same lardaceous tissue was found in the following parts :—1st. In the liver, which was as it were infarcted with a great number of white, hard mâsses, which had all the characters of encephaloid matter still in the crude state.

2ndly. In the spleen, where we discovered masses similar to those occupying the liver.

3rdly. In the right kidney, one of the cones of the tubular substance of which was entirely changed into encephaloid matter. From this cone, thus changed in structure, prolongations were observed to proceed of an accidental production, which extended as it were by radiation to different points of the cortical substance.

4thly. In the uterus, the body of which contained three large cancerous masses.

5thly. In the lymphatic ganglions along the vertebræ, in those particularly around the receptaculum chyli.

6thly. In the right lung, through the substance of which there were scattered from ten to twelve small white masses, similar to those of the liver, spleen, &c. These masses appeared to be limited to certain lobules. But further, there was found in the lung another and a more uncommon lesion ; namely, numerous lymphatic vessels distended with a whitish matter, which was observed over the external surface of the right lung, dipped into its substance, and terminated in the diseased lobules, where it was lost. The other lung presented nothing similar.

7thly. The thoracic duct was filled with a turbid, whitish matter, in which were suspended some shreds of the same colour.

Nothing particular was observed in the other organs, except that the mucous membrane of the stomach presented in its right half a slight slate-coloured tint, and some veins filled with blood passed beneath this membrane towards the great cul-de-sac.

Here is a very remarkable case, wherein we find no lesion of recent formation, which can be considered as the origin and cause of the typhoid phenomena. We can no longer explain them but by admitting that the general alteration of nutrition had gradually deteriorated the hematosis and innervation to such a degree, that the slightest shock given to the system was sufficient to produce the typhoid state.

When, in cases more or less analogous, we observe adynamic symptoms to supervene, it is much more usual to meet with some intercurrent inflammation, which has produced them, by reason of the unfavourable conditions in which the system happened to be at the time : the conditions are the predisposing cause, whilst the inflammation is but the occasional cause.

SECTION II.

TYPHOID SYMPTOMS, WITHOUT LESIONS APPRECIABLE BY ANATOMY.

The case which terminates the preceding paragraph has already furnished to us an instance in which, among the numerous alterations found in the dead body, none could be considered as the immediate cause of the symptoms of adynamic fever which terminated the patient's life. In order to account for them, we were obliged to suppose a particular modification of the innervation, which the necropsy was unable to point out to us. It is cases of this kind, in which however there is no longer even a previous chronic affection, as in the forty-fifth case, that we have detailed in this paragraph. The study of similar cases, however uncommon in other respects, appears to us to be highly interesting, inasmuch as it accustoms us to see that the scalpel alone is far from giving us the key to all the problems of our science.

Case 47.—*Symptoms of gastric disturbance at the commencement; profuse evacuations up and down after the administration of two grains of tartar emetic—Sudden appearance of ataxo-adynamic symptoms, and death after some hours—Very rapid putrefaction after death—No lesion.*

A medical student had for several years been subject to great and unremitting mental suffering, and considerable privations. When he attained his twenty-eighth year his situation became improved. Whilst he was unfortunate, he consulted me several times for a chronic affection of the stomach, which had disappeared from the time he began to be more happy in his circumstances. Towards the latter end of May, 1831, he consulted me again, not on account of his health, which he assured me was excellent, but concerning his course of life. On the 5th of June he begged of me to pay him a visit, in consequence of being taken ill. He then gave me the following account. June 2nd, he began to feel some pain of head. On the next day he felt ill all over him, and his appetite was lost. He remained in the same state on the 4th; he thought he had some fever. On the 5th I found him in the following state:

Slight headach, principally seated in the frontal region, yellow tint in the face. General debility. Feeling of lassitude. Bitter taste in the mouth; tongue broad, covered with a yellow coat, without any redness of its edges and apex; nausea, and from time to time he threw up whatever liquids he had swallowed; no thirst; complete loss of appetite; abdomen in every part soft and free from pain; constipation. Skin not hot and pulse not frequent (being 70). These symptoms seemed to require an emetic; the patient took immediately two grains of tartar emetic in two half-glasses of water. It was then four o'clock in the afternoon. In the night he had profuse vomiting, and a great many stools. All the morning of the 6th he was very much depressed. I visited him again at four in the evening: he was then in a state of indescribable anxiety. His state of anguish was such that he could not answer questions without considerable difficulty. However, the only local suffering he complained of was an acute pain in the two arms, which pain was aggravated when his limbs were moved. The tongue had retained its moisture; the abdomen was every where free from pain and soft, the skin was not hot, pulse frequent and small. The patient expressed to me a desire to be removed to the Pitié, into one of my wards: he was instantly brought, and hes carcely arrived there when he was bled. I know not what happened to him during the night, but on the 7th of June, at seven in the morning, he was in the last struggle. His features were awfully changed; intelligence completely gone; extremities cold, and pulse thready. Still further, an extraordinary phenomenon struck us; namely, the black colour of the scrotum and penis, which was at the same time swollen; one would have said that these parts were attacked with gangrene. An hour after, the skin of the chest, beneath the two clavicles, had also a deep violet tint, tending to black, and the same colour began to spread over different parts of the extremities. He died at nine o'clock in the morning.

Post mortem. Twenty-five hours after death. (During all the time from the moment of his death to the autopsy the temperature was lower than it usually is in the month of June; and other bodies, examined on the same day, and even a longer time after death, presented no trace of putrefaction.)

The meninges and surface of the cerebral convolutions presented a reddish tint, similar to that which is found in these parts on bodies which have been for several days in a state of putrefaction. A little reddish serum was found in the ventricles; all the cerebral pulp was soft.

The lungs, which were gorged with blood, were greenish on their surface.

The heart contained in its different cavities some liquid blood, in which was observed a great number of liquid air-bubbles. Its tissue was soft and reddish, and on its inner surface it presented a brown red colour. The arteries and veins, in which a liquid and *frothy* blood was also found, presented a red tinge on their inner surface.

The mucous membrane of the stomach was separated from the subjacent tissues by a considerable quantity of gas. Everywhere this membrane was white and of some consistence. Very close to the cardia, to the right of this orifice, there appeared from five to six blackish spots, which consisted of blood which infiltrated the very tissue of the mucous membrane: they were real petechiæ. The inner surface of the duodenum, jejunum, and ileum, and of all the large intestine, were everywhere remarkably pale. There were neither follicles, nor Peyer's patches, enlarged. The spleen was enlarged, and very soft. The tissue of the liver was very friable and pale. The gall-bladder contained a little greenish bile. The kidneys were reddish, the bladder was distended by a great quantity of urine, and its inner surface was white. The black colour of the skin of the scrotum, of the penis, thorax, and other points, was owing to a sanguineous infiltration of the subcutaneous cellular tissue.

As a first fact, it should be laid down that, with the exception of the ecchymoses and petechiæ, all the other alterations found on the dead body were evidently a result of putrefaction. But a very remarkable circumstance in this case is, the rapidity with which the decomposition of the parts began to take place. A longer time, or a higher temperature, is ordinarily required, in order that we may find all the cadaveric lesions observed in this case, as liquefaction of the blood, the frothy state of this liquid, red colouring of several tissues, softening of several others, emphysema of the stomach, &c. Suppose an individual poisoned by any septic substance; this is the precise state in which his body will be found. In this case also there will have been, before death, transudation of the blood through its vessels, and here the same phenomenon took place; several portions of the subcutaneous cellular tissue were filled with blood before death came on. Had the patient's life been prolonged for some hours, if we may judge from the rapidity with which the blood was effused under different points of the skin, it is very probable that all this membrane would have presented but one extensive ecchymosis; probably too some hours later the mucous membranes would in their turn have allowed the blood to pass through them, and the black vomit would have taken place. Were there not some petechiæ already in the stomach? Thus, in this extraordinary disease, what we principally observed were phenomena similar to those which present themselves when a miasm or septic poison has vitiated the blood.

We think then that there existed in this case an alteration of the blood. Was it primary? Was it the origin and cause of the other phenomena?—or, was itself the result of a vitiated state of the innervation?—a question which cannot be solved in the present state of science. Remark, also, how insidious the onset of the disease was. Simple gastric disturbance opened the scene, and in some hours it became changed by a group of symptoms approaching those of the most malignant typhus. No doubt the life of mental distress and bodily privation, from which this young man had but just emerged, had left in his entire organism a predisposition to such consequences.

A case which bears many points of resemblance to that now detailed, was published some years since, by Dr. Gauthier, of Clanbry*: neither in this case, nor in our own, was it to the circumscribed inflammation of a solid that the origin and onset of the disease can be referred, but to an unknown morbid state either of the nervous system or of the blood.

The subject of Mr. Gauthier's case was nineteen years of age. After most painful mental exertion and prolonged watching, he had a swooning fit. Two hours after this attack, which left him weak, and, as it were, exhausted, he was seized with an intense fever; he felt extreme anxiety; his limbs were painful; he complained of his throat; the general sensibility was very much exalted, the tongue was red, as well as all the mucous membrane of the mouth and pharynx; the respiration was unequal; some delirium supervened. Two days passed in this way; then the disturbance of the innervation commenced; the pulsations of the heart and arteries became irregular and weak, the breathing extremely laborious; the muscular strength was diminished; the sensibility was abolished; the intelligence was very much impaired; the extremities became cold, and a clammy sweat was the precursor of death, which came on eighty-five hours after the occurrence of swoon. He had been bled repeatedly.

In order to account for all these symptoms so *extremely ataxic*, and the aggregate of which at another period would have been called *malignant fever*, what was found at the post-mortem examination? A considerable and general engorgement of the venous system, everywhere liquid and purple blood, effused in several points into the cellular tissue under the form of ecchymosis; and further, an extraordinary softening of most of the organs, of the brain, heart, lungs, liver, spleen kidneys, even of the very muscles, which, in every part, could be readily torn, and presented at the same time a pale colour.

The two facts now cited appear to us highly important, and we direct all the attention of observers to them.

Here now is another case in which the functional disturbances seem more especially directed to the nervous centres. The blood no longer appears to be the cause of them. The disease in the case now about to be detailed, would have been called ataxic fever by Pinel; meningitis, or meningo-cephalitis by others. The information afforded by the necropsy was here again completely negative.

CASE 48.—*Febrile delirium; convulsive movements—After the application of leeches sudden sinking, which was followed by death—No appreciable lesion.*

A boy, seventeen years of age, of a strong constitution, began to feel, on the 22nd of January, an intense headach, general illness, great depression: he continued, however, to work, and to eat. On the 27th of January, in order to relieve his headach, he drank some brandy. This aggravated his suffering. On the 28th he entered the Maison de Santé, and presented the following state:—

Face very much injected, as also the conjunctivæ. Ideas rather confused, and he answered the questions put to him very indistinctly. Pulse 120, skin burning hot. Tongue moist, and not red, abdomen soft and free from pain, no diarrhœa. We directed twenty leeches to the anus. According to our opinion, this patient had an inflammatory fever with predominance of cerebral excitement.

The next day, we found the patient perfectly delirious, and from time to time the face and extremities were agitated by convulsive movements. The fever still continued; appearance of the tongue natural. He was bled to twelve ounces.

* Archives de Medicine, tom. xxiii., p. 232.

In the morning of the 30th, his state was the same. We ordered twelve leeches behind each ear. A little time after our visit, and before the leeches were applied a strong convulsive fit came on, in which all the body participated, and which was followed by great prostration. At noon, however, the leeches were applied; their bites continued to bleed till two o'clock. The patient was then weak and covered with a cold sweat; the blood was stopped; but the prostration increased, the pulse ceased to beat, and the patient died at seven o'clock in the evening.

No organic lesion detected in any part of the body.

Here is a well marked instance of continued fever with the phenomena concentrated towards the nervous system, without anatomy being able to discover any lesion which could account for them. Can it be said that the disease existed nowhere, or, if some will have it so, that it existed everywhere? We shall not reason so; we shall place the seat of the evil where the symptoms pointed it out, namely, in the brain: but this fact is to be added to several others, which prove the insufficiency of our present means of investigation to discover in the dead brain the traces of the disease seated in it.

In the case now before us was the disease an inflammation? Should it be combated by bleeding? One would be tempted to doubt it, seeing the little success attending the bleeding employed, and particularly when one considers the very unfavourable results which followed the last application of leeches. Was it a case for the administration of opium? We do not think so; we did not here discover the characters of that peculiar delirium which yields to narcotics, and of which we shall speak in a subsequent part of this work. It is in cases of this kind, where the nervous disturbance seems to be the entire disease, that cold effusions, employed according to the method of Dr. Recamier, might be tried with some chances of success.

The different cases detailed in this paragraph appertained to diseases which had a rapid course, a very short duration, and in which the adynamic or ataxic symptoms developed themselves from the commencement. These diseases have not the aspect of those designated by MM. Chomel and Louis by the name of typhoid fevers. Hitherto, in all the cases connected with this latter affection which we have detailed, we found some alteration, the intensity of which was in general proportioned, with some exceptions, to the severity of the symptoms during life. Are there, however, cases where typhoid fever, including under this designation only the affection so called by MM. Chomel and Louis, leaves on the dead body no lesion to which both the symptoms and death can be rationally attributed?

CHAPTER II.

CONTINUED FEVERS TERMINATING IN A RETURN TO HEALTH.

The object of the preceding cases and observations was to determine, by the study of the lesions found on the dead body, the seat and nature of the diseases described by nosographists under the names of inflammatory, bilious, nervous, adynamic, and ataxic fevers.

The following cases will present to us these same diseases, from their mildest to their most intense forms, terminating with more or less certainty in a return to health, under different modes of treatment. But, in order to judge of the efficacy of these modes, it will be necessary that we not only direct our attention to these cases of recovery, for there are some patients who recover or die, whatever treatment may be employed; it will also be necessary that we retrace our steps, and that with respect to therapeutics we compare those cases which terminated in death with those where recovery took place.

On studying the effects of these different methods of treatment, we shall find more than once, that their success cannot be always explained solely by our ideas of pathological anatomy, and that the lesions found on the dead body do not in all cases furnish the only therapeutic indication; there are other indications to be sought, both in the nature of the causes which have produced the disease, and particularly in the state of innervation, which sometimes has existed previously to the disease, the form and intensity of which is determined by this state, and which is sometimes produced by the disease itself. We shall thus conceive why, in practice, whilst we know that in most of what are called essential fevers there is gastro-intestinal irritation, it will not be unreasonable in some cases to pay but secondary attention to this irritation, and to exert our principal efforts to produce some modification in the innervation by the employment of tonic and antispasmodic substances, which no doubt have been often very much abused, but whose use we are not yet warranted in entirely proscribing.

The following cases will present to us those diseases known by the name of *fevers,* treated, first, by the mere expectant method; secondly, by evacuants; thirdly, by antiphlogistics properly so called (bleeding and revulsives); fourthly, by tonics.

ARTICLE I.

TREATMENT BY DIET AND SIMPLE DILUENTS.

CASE 49.—*Recent arrival in Paris—Diarrhœa at the commencement; fever; return of the transpiration which had been suppressed; cure—Eleven days' duration.*

A servant girl, twenty-one years of age, of a strong constitution, three months residing in Paris, felt general illness on the 8th of October without any known cause; she lost all appetite, and was attacked with severe purging. For the eight days following, the diarrhœa and fever continued. The patient eat almost as much as in health. She entered the Charité on the 16th of October, at which time she complained of headach. The face was red, the tongue white, bad taste in the mouth, burning thirst, pain in the umbilical region. She had had twelve very liquid stools during the last twenty-four hours. The pulse was scarcely frequent, skin not very hot. In the state of health the axillæ were the seat of very profuse perspiration, which had now stopped. We prescribed two demi-lavements of marsh-mallow and poppy, barley ptisan with mucilage, strict diet. In the course of the day the patient went but four or five times to stool. In the evening she had considerable fever. In the night she was tormented with frequent nausea. On the morning of the 17th she was in the same state as on the day before, the purging was lessened; no febrile accession in the evening, and she slept rather well during the night. On the 18th the same prescription. She had but one stool during the day. 19th she found herself very well, and had some appetite. The axillary transpiration was re-established during the night. She left the hospital on the 21st.

The cure of this patient was prompt and easy. She was scarcely relieved from the purging and fever, when she completely recovered her health and strength. She had not, in some degree, a stage of convalescence. Would she have recovered so rapidly, if she had been exhausted by blood-letting? We may also remark in this woman the suppression of an habitual partial transpiration, which was re-established on the return of health. If the morbid symptoms had persisted, it would have been judicious to endeavour to restore the axillary transpiration by means of frictions, warm fomentations, the application of irritants to the part, &c.

CASE 50.—*Excessive hard labour and bad diet—Diarrhœa at the commencement—Tongue dry at intervals—Disease of three weeks' duration.*

A tailor, twenty years of age, had spent several nights at work, and was but badly fed. His disease commenced by profuse diarrhœa. When he entered the Charité his countenance was pale and harassed; bronchial irritation was added to that of the intestines. The purging stopped several times for one or two days, and then it re-appeared; the tongue became dry and red from time to time. These alternations of better and worse were observable on the patient for about three weeks. He took nothing but barley ptisan, some juleps at night, and some demulcent lavements.

In this case the symptoms announce considerable irritation in the digestive tube. Should we have endeavoured to abridge its duration by the employment of blood-letting? We think that its employment would not have been unattended with injury in the case of a person whose digestive tube was irritated only in consequence of certain influences *, which had placed the nervous system and the blood in morbid conditions, calculated to effect a change in the entire system before the gastro-intestinal irritation appeared. Often have we seen, in such cases, that the bleeding did not remove the local affection, and, moreover, that it was immediately followed by a state of prostration, which increased according as the bleedings were repeated; so that, under such circumstances, the therapeutic indications should be deduced less from the local lesion, which gives its name to the disease, than from the state of the patient before this lesion was developed.

CASE 51.—*Shivering at the commencement—Tongue dry and brown—Disease of twelve days' duration.*

A man, twenty-two years of age, had been ill for the last nine days, when he entered the hospital; he had at first felt some shivering, then a burning and constant heat; no purging. At the time of his admission the countenance was very calm, fever very moderate, and the general state good. However, in the midst of these symptoms, which indicated but a mild disease, the teeth were encrusted, and the tongue very dry and brown. (Barley ptisan and emollient lavements.)

On the next day the tongue became moist, the pulse lost its frequency, and he was convalescent in two days after.

This case is remarkable for the discordance existing between the state of the tongue and of the teeth, from which one might apprehend a most serious affection, and the very great mildness of the other symptoms.

There are some persons whose tongue becomes dry and brown in every attack of illness, no matter how slight. This happens principally in the case of aged persons; it is also observed in young persons, those particularly whose nervous system has been harassed by excesses, or exhausted by scanty food. This state of the tongue should caution us against excessive bleeding.

---

* These different influences certainly act less on any one particular organ than on the innervation, whose powers they modify, and on the blood, whose composition they have a tendency to change. Thus, before an organ becomes manifestly diseased in persons subjected to these influences, they had produced a morbid disposition in the system. In this predisposition, much more than in the local lesion, we should seek for the cause of the different symptoms which accompany this lesion. But what is the onset of this lesion itself? It probably is the same previous morbid state of the innervation and the blood. Does not a moral excitement produce diarrhœa, colic, and vomiting? Does not the injection of putrid matter into the veins occasion gastro-enteritis in animals?

Case 52.—*Residence in Paris for eight months—Excessive use of wine—Shivering at the commencement; at first a predominance of the general symptoms—Diarrhœa towards the end.*

A boy, fifteen years old, who had been living in Paris for about eight months, was seized with a violent shivering a little time after he had drunk more wine than usual. On the following days he had severe headach, pain in the pit of the stomach; his appetite still remained; bowels were constipated, and he had alternations of heat and cold. He had been keeping his bed for about four days previous to his entering the hospital. At his admission he had no headach, but some pain in the back of the neck and at both shoulders; intense redness of the cheeks; dizziness; tongue white, with red points, and moist; thirst not severe; some appetite; slight colicky pains; one or two liquid stools every twenty-four hours for the last two days; pulse frequent and hard; skin very hot; perspiration over the face. (Demulcent ptisans.)

On the following days there was a gradual diminution of the symptoms, and a progressive return to health.

Here, again, the signs of gastro-intestinal irritation are but little marked, and it would be difficult to say whether the cause which seems to have occasioned the disease had not at first acted on the brain rather than on the stomach. Introduce, in fact, a certain quantity of alcoholic liquor into the stomach of an animal; it is not of gastric irritation that you will find traces, it is not towards the stomach that the great functional disturbances will appear, but in the nervous centres.

Case 53.—*Residence in Paris for sixteen months—At the commencement the general symptoms prevailed—At a later period there was diarrhœa, petechiæ; sweats towards the termination—Disease lasted seventeen days.*

A shoemaker, about seventeen years old, residing in Paris for sixteen months, had an attack of fever and purging five months before. On the 4th of August, without any known cause, he felt general illness, and an intense pain in the frontal region. Up to the 10th the illness increased; his bowels were constipated, pulse frequent and full; skin hot. (Barley ptisan, flax-seed lavement.)

On the 11th, felt himself better; headach less; same state of the digestive passages; pulse frequent; skin hot and dry.

On the 12th, Diarrhœa for the first time; tongue less red; continuance of the fever.

On the 13th, continuance of the diarrhœa; tongue red and dry; fever less.

On the 14th, profuse sweat; tongue white and moist; diarrhœa lessened; pulse scarcely frequent.

On the 15th, cessation of the diarrhœa; some petechial spots on the chest and epigastrium; he was somewhat restless during the night; frequency of pulse and heat of skin increased.

From the 15th to the 20th very profuse sweats occurred; the petechial spots disappeared; the pulse lost its frequency. On the 21st the patient was very well.

This disease, though rather severe, was still treated only with diluents; care was taken merely to remove everything that might have thwarted the progress of nature. At first it was the stomach which seemed to be principally affected; at a later period the large intestine became irritated; the appearance of the petechial spots coincided with an increase of the fever; one might then dread the development of ataxo-adynamic symptoms; profuse sweats came on, and from that time the disease progressed towards resolution. Were these sweats critical? Would they have occurred if the disease, instead of being left to its natural course, had been interfered with in its progress by an active treatment? Then, probably, another group of phenomena would have presented themselves, and probably the disease would have taken another course, have been attended with other symptoms, and would have had another mode of termination.

CASE 54.—*Residence in Paris for nine months—Diarrhœa at the time of admission—Stupor; tongue dry and brown; petechiæ—Gradual cessation of the symptoms—Continuance of the petechiæ at the time of convalescence.*

A lock-smith, twenty-three years of age, who had been residing in Paris for the last nine months, had some purging for several days back, when he entered the Charité. At this time he presented an air of stupor, and had headach; tongue red and dry, and brown in the centre; abdomen free from pain, a little tense; purging diminished. Pulse of moderate frequency, unequal with respect to its strength; skin covered with a profuse sweat, red spots, a little prominent, varying from the size of a grain of millet to that of a small lentil, scattered over the abdomen and chest (two blisters to the legs; barley ptisan, emollient lavement, emollient fomentations to the abdomen). On the evening of the 7th there were sweats; pulse not frequent; from five to six liquid stools; tongue moist. On the following day tongue more moist, constantly brown in the centre; profuse sweat; pulse not frequent, a little irregular; several stools; some appetite; continuance of the spots.

During the three days following there was cessation of the diarrhœa; tongue natural; pulse not frequent; continual sweats. The petechiæ were not lessened. Dating from the 12th there was complete convalescence; still the petechiæ did not entirely disappear till the 16th. Symptoms of rather a serious character existed at the time of the patient's entering the hospital, though the pulse was but moderately frequent. Profuse sweats continued to take place after the pulse was entirely returned to its natural state. The petechiæ, which had commenced to show themselves at the time the disease was most intense, did not diminish with it. These petechial spots survived in some measure all the other symptoms, and so appeared to be entirely independent of them.

An entero-colite, or, if you will, a dothinenterite, marked the commencement of this disease; the innervation was in a short time rather seriously affected. The stupor, the brown appearance of the tongue, and the petechiæ, were certainly not the result of gastro-intestinal irritation. This irritation was one of the elements of the disease; but, in my opinion, it did not constitute the entire of it. Yet what was done? No other active treatment, except the application of blisters to the legs, the use of diluent drinks, some lavements, and fomentations to the abdomen. No blood-letting was required to restore the patient to health.

CASE 55.—*Residence in Paris for eleven months—Articular rheumatism at the commencement; disappearance of the pains; continuance of the fever: subsequently stupor, delirium, tongue of a black colour; slight diarrhœa—Continuance of the disease for twenty-seven days.*

A medical student, twenty-two years old, had been in the enjoyment of good health since his coming to Paris, where he had been residing for the last eleven months. He slept in an airy room. Had frequently indulged in venereal excesses. On the 12th of November he felt general illness, shivering, and some headach. On the three days following the same state continued, mouth was clammy, there was loss of appetite and constipation.

When called to him, November 16th, we found him in the following state:—countenance pale and dejected; features drawn, restless expression of the physiognomy, pain felt in moving. The tongue was loaded with a thick whitish coat; no thirst; loss of appetite; abdomen soft and free from pain, no alvine evacuation since the beginning of the disease. Pulse frequent, not full ; moderate heat of skin.

Seeing no precise indication present itself, we merely prescribed a barley ptisan, two simple lavements, and diet.

The five days following the patient remained in nearly the same state. (The same prescription : a bath.)

November 22nd, the eleventh day, features more sunk ; prostration of strength greater ; his answers were uncertain ; the tongue, which was protruded with difficulty, was covered with a greyish coat, and was very viscid ; this same coat glued the teeth to each other. (Infusion of orange-leaves.)

On the twelfth day he had epistaxis. On the thirteenth day tongue was dry and covered with a black crust ; air of stupor ; delirium at intervals. Pulse very frequent and small. On the fourteenth day a second epistaxis, diarrhœa for the first time ; same state in other respects. We continued the simple diluent drinks. On the fifteenth, sixteenth, and seventeenth days there were several attacks of epistaxis. Tongue was very dry and brown ; stupor ; silence ; delirium in the night. (Barley-water, marsh-mallow lavements, frictions with warm vinegar to the extremities.)

On the eighteenth and nineteenth days, no change ; no epistaxis. (The same prescription.)

On the twentieth day there was less prostration expressed in the countenance ; the eye was more natural ; the tongue was a little moist. Three liquid stools since the last twenty-four hours. From the twenty-first to the twenty-seventh day the amendment progressed. On the twenty-seventh day the tongue was moist and of a good colour ; the strength was improved ; the diarrhœa no longer existed ; the pulse still retained a little frequency, which it lost on the following days. In the month of December the patient was restored to his ordinary state of health.

The subject of this case presented more alarming symptoms than the others. He recovered under the same treatment. This was one of those cases in which we think it wise to abstain from blood-letting. Though this disease was not put out of its course by any treatment, it terminated without the appearance of any phenomenon which may be called critical.

The cases just now detailed may be of some use, at a time when the prevailing theories incline us to take blood at the onset and during the course of every febrile disturbance. They show what may be expected in these diseases, whether light or severe, from a treatment purely expectant.

ARTICLE II.

TREATMENT BY EVACUANTS.

Of the individuals who form the subject of the cases contained under this article some merely presented the symptoms of that morbid state which is known by the name of gastric and intestinal disturbance ; they had but a very slight fever, some even had none.

Others, presenting nearly the same symptoms as the preceding patients, had moreover fever of considerable violence.

Others, again, presented several of the symptoms of what is called the adynamic state, when we tried the effect of a vomit.

CASE 56.—*Symptoms of gastric disturbance; absence of fever—An emetic—Cure.*

A young man, seventeen years of age, born in Paris, presented, on entering the Charité, the symptoms of that state of the system which has been designated by the name of lassitude with gastric disturbance (*courbature avec embarras gastrique*). He had lost his appetite for the last fifteen days; he had a feeling of general illness, intense supra-orbital headach. He complained of constant epigastric pain and of constipation. The tongue was yellowish, mouth clammy. There was a total absence of fever. In vain the patient had recourse to diluent and demulcent drinks, his state was not improved. Two grains of tartar emetic were given him, which acted very powerfully both upwards and downwards. At the end of twenty-four hours all the morbid symptoms had disappeared, and the patient was restored to his ordinary state of health; no sweat had taken place.

Thus in this case the employment of an emetic removed almost instantaneously symptoms which diet and simple diluents were unable to remove.

CASE 57.—*Headach; spontaneous vomiting—Slight fever—Emetic—Cure.*

A boy, seventeen years of age, residing in Paris for about five weeks, experienced, on the 4th and 5th of October, some dizziness and pain of head. On the 5th he vomited of his own accord some bitter yellow matters. On the 6th he presented the following state: supra-orbital headach, tongue white, bad taste in the mouth, nausea, sensation of general fatigue, stools natural, very slight fever. (Eight grains of ipecacuanha, barley ptisan, broths.) He vomited a considerable quantity of a glairy substance and a lumbricus. On the next day he was very well.

We have often seen, as in this case, persons tormented with nausea and even vomiting, who were not relieved till after taking an emetic. Then the fever ceased and perfect health was restored.

CASE 58.—*Constipation of long standing; stercoral tumour; fever—A repetition of emeto-cathartics; cure.*

A tailor, twenty years of age, who had recently come from Bayonne, had not been at stool for the last fifteen days, when he entered the Charité, September 22nd. He complained of colicky pains. There was found around the umbilicus a moveable tumour, which was considered by M. Lerminier as the result of the accumulation of fæces in the cells of the colon. The tongue was covered with a yellowish thick coat: pulse frequent. (Two lavements of senna and sulphate of soda, of each an ounce. Linseed ptisan.)

A great quantity of very hard fæces was discharged. The day after the umbilical tumour was gone. The pulse, though less frequent, was not yet natural. The yellowish coat of the tongue continued. Ten grains of ipecacuanha were prescribed. The patient vomited but little, but he went frequently to stool.

On the 24th, tongue bright red, appetite good, pulse natural. This state continued for the next two days. On the 27th the mouth again became clammy; there were borborygmi and constipation, slight frequency of the pulse. (Whey, with half an ounce of sulphate of soda.) Four or five stools in the course of the day.

October 1. The symptoms of gastric disturbance still continued. Two pastilles of emetine, each containing half a grain of this substance, were given at the interval of a quarter of an hour between each. The patient vomited some minutes after having taken the second of them: he had one evacuation by stool. He soon left the hospital in good health.

We shall remark in this case the way in which the symptoms returned several times, which, on returning, were combated either by an emetic or a purgative. They did not re-appear after the last vomiting occasioned by the emetic.

We shall also call attention to the tumour which was felt through the abdominal parietes, and which consisted of hardened fæces.

Stercoral tumours, similar to that observed in the preceding case, have been taken sometimes for schirrous tumours. We have seen a striking example of this at the Charité in an old woman, who presented between the epigastrium and umbilicus, a prominent, knobby tumour, which was moveable and painful. This woman gave but little information regarding her previous state. Being first taken for a little time into the surgical wards, she was considered to be affected with schirrus of the epiploon. The same opinion had been given of the case at the central bureau. She was subsequently placed under M. Lerminier's care. On examining the abdomen, he soon recognised, along the course of the colon, knobby tumours similar to the preceding, except that they were smaller. It was soon ascertained that she had not been for a long time at stool. M. Lerminier considered these tumours owing to the accumulation of fæces. Purgatives were administered both up and down; an immense quantity of hard fæces was passed, and the pretended schirrus disappeared.

In other cases, we have seen the prolonged accumulation of matter in the large intestine give rise to general tension of the abdomen, and to pains so acute as to excite suspicion of peritonitis. We observed these pains in their highest degree of severity in a woman who had been recently confined. When we saw her for the first time, her countenance was pale; her features, very much altered, expressed the most intense anxiety; the pulse was small and very frequent; the abdomen was the seat of very severe pains, which forced the patient to scream, and were increased on pressure. These pains, which were rather slight at first for some days, had attained, since the last forty-eight hours, this high degree of severity. M. Lerminier, on examining the abdomen, felt along the course of the colon knobby, uneven tumours, which were moveable under the finger. The patient also informed him that for more than twelve days her bowels had been obstinately constipated. Upon this M. Lerminier suspected the real nature of the disease: he first gave a purgative lavement, which brought away a considerable quantity of very hard fæces: the pains were lessened, but did not disappear. On the next day an ounce of syrup of buckthorn, with the addition of four grains of gamboge, brought away an enormous quantity of fæces; the pains disappeared, and in twenty-four hours after the patient was restored to her usual state of health.

Case 59.—*Pleurodynia at first; subsequently diarrhœa; absence of fever—An emetic given during the existence of the diarrhœa; two days after, complete recovery.*

A mason, twenty years of age, who had been residing in Paris for a year, felt, during the last fifteen days, a pain under the left breast: it was increased by percussion and strong inspiration. He had no cough, and breathed freely. For the last ten or twelve days he had some purging; his tongue was covered with a thick yellowish coat; he had no fever; he vomited a worm the evening he entered the hospital. The day after, 8th of May, he took twelve grains of ipecacuanha, with a grain of tartar emetic. He vomited once a great quantity of yellow bile and thick mucus; he went but four times to stool.

On the 9th the pain of side was entirely gone; the tongue had become clean.

10th. The diarrhœa was gone, the patient perfectly restored, and left the hospital on the 12th.

A new circumstance presented itself to us in this case, namely, the administration of an emetic, whilst there was diarrhœa, and the cessation of this diarrhœa after the vomiting.

This slight disease presents several traits of resemblance to an affection described by Stoll under the name of bilious pleurisy: loss of appetite, bitter taste in the mouth, spontaneous vomiting, thick coating of the tongue, purging, and at the same time a fixed pain in a point of the thoracic parietes; lastly, the rapid disappearance of the stitch in the side, and of the other symptoms, after the employment of an emetic.

CASE 60.—*Symptoms of bilious fever—Inefficacy of simple diluents—Rapid recovery after the employment of an emeto-cathartic.*

A sawyer, twenty-three years of age, residing in Paris for the last five months, felt, without any known cause, on the 13th of August, some headach, nausea, and colic. These symptoms continued on the following days. He was continually drowsy. Purging soon set in. To relieve it he took a bottle of wine with three hard eggs. The purging was accordingly stopped for twenty-four hours, but it then returned. When the patient entered the Charité, August 21st, he complained of a severe frontal headach, dizziness, general fatigue; the tongue was whitish, bad taste in the mouth; frequent nausea took place; there was a sensation of weight at the epigastrium; taking drinks increased it, and occasional nausea. Two or three watery yellow stools took place in the twenty-four hours. The pulse was frequent and full; the skin was moist. (Vegetable lemonade, linseed lavements, emollient fomentations over the epigastrium, diet.) On the four days following, the mouth became worse; the tongue was very much loaded; the same symptoms continued. The same treatment had been employed each day.

On the 26th the patient took some whey, with the addition of two grains of tartaric emetic and half an ounce of sulphate of soda. He vomited, and went several times to stool. On the following day the bad taste of the mouth was gone; but a small whitish coat was observed on the tongue; pulse but of moderate frequency. (Whey, with pulp of tamarinds.) 28th and 29th. Two or three stools in the twenty-four hours. Complete cessation of the fever. 30th. The appetite was good; perfect recovery.

The signs of a gastric affection were very well marked in this patient. Diet and simple emollients were ineffectual to remove on the one hand the fever, on the other hand the bad taste in the mouth, the nausea, the weight in the epigastrium, the coating of the tongue, and, lastly, the purging. Who can help being struck with the rapid improvement which took place as soon as the patient took an emeto-cathartic?

CASE 61.—*Symptoms of intense bilious fever; tendency of the tongue to become dry; absence of diarrhœa—Bleeding; amendment—Still a continuance of the fever and bilious symptoms—Vomiting and purging; return to health.*

A Savoyard, thirty years of age, residing in Paris for the last two years, skin brown, muscles well developed, felt, since the twelve days previous, a general illness and some shivering; he lost appetite; the frequency of the stools was not increased. He kept quiet, and observed strict diet. At the time of his entering the Charité, on the 10th of April, there was intense headach, redness of face with a yellow tint around the lips and alæ nasi; conjunctiva a little yellow; tongue whitish, dotted with red points, showing a tendency to become dry; mouth very bitter, nausea, pains in the epigastrium, stools natural; pulse frequent, skin hot and dry. There was in this individual a group of inflammatory symptoms, not presented by the patients already mentioned. M. Lerminier accordingly commenced by prescribing a bleeding to the extent of four palettes. The blood drawn was slightly buffed.

On the 11th there was a perceptible improvement; tongue was moist; pulse less frequent. On the 12th the patient complained of great weight of head, and of an intolerably bitter taste in the mouth. The pulse was more frequent than on the day before; he had had one stool. (Barley ptisan.) On the 14th the tongue was covered with a yellowish coat. (Six grains of ipecacuanha.) The patient vomited a great quantity of yellow bitter bile; he went three times to stool: he sweated during the night.

On the next day, the 15th, the pulse had lost its frequency; the mouth was less bitter; the pain of head was gone; the tongue was still loaded. Two grains of tartar emetic were prescribed. The patient did not vomit, but had two copious stools; he sweated that night. 16th, the tongue resumed its natural appearance; the bad taste in the mouth was gone. 17th, perfectly recovered.

In this case the employment of evacuants was preceded by a bleeding; it exercised a favourable influence on the symptoms. The patient, after losing some blood, was certainly better, but he was not cured; the pulse had not lost its frequency; the pain of head and bad taste in the mouth still continued. It was then that emetics were prescribed; ipecacuanha, given in a small dose, produced copious vomiting; tartar emetic, afterwards administered, merely purged; and it was after this evacuation downwards that all the morbid phenomena finally ceased.

CASE 62.—*Diarrhœa, fever, etc.—Bleeding and an emetic on the same day—Rapid recovery.*

A man, twenty-two years of age, residing in Paris for about two months, felt, seven days before his admission into Charité (11th April), general illness. He had at the same time some shivering. On the 12th he kept to bed. On the following day he had diarrhœa and fever.

Present state, April 18th, tongue loaded; abdomen a little tumid, free from pain; ten stools in the twenty-four hours; pulse full and frequent; skin hot; cough with catarrhal expectoration. (Twenty leeches applied to the anus at eight o'clock in the morning, ten grains of ipecacuanha at noon.) The patient vomited once, and went from twelve to fifteen times to stool. On the 20th the fever was gone; he had but three alvine evacuations. He was soon quite well.

CASE 63.—*Fever; tongue red; abdominal pains; constipation—Employment of tartar emetic—Temporary amendment; then increased violence of symptoms, which yielded to an application of leeches.*

A boy, sixteen years of age, who had been residing in Paris for about five months, felt some abdominal pains since March 15th. On the 20th he discontinued to work. He entered the hospital on the 28th, and complained of pain over the entire abdomen, which was increased by pressure. Constipation; bad taste in the mouth; tongue white at its centre, intensely red at its edges and apex; pulse frequent; skin hot. (Two grains of tartar emetic in a pint of veal broth; barley ptisan.) The patient vomited, and went to stool six times. At five in the evening there came on an exacerbation of the fever, during which the abdominal pains increased. On the 29th the pulse was scarcely frequent; the tongue presented the same appearance. (Barley ptisan.)

On the 30th there was intense fever; tongue red, evincing a tendency to become dry; acute pain around the umbilicus; stools natural; cough frequent and painful. (Ten leeches on either side of the chest.)

On the 1st of April there was complete apyrexia; cough nearly gone; disappearance of the abdominal pain. In a few days he was completely well.

We cannot too strongly call attention to the apparently improved state in which we found the patient the day after he took the emetic. If we had then discontinued to watch the case, we should have considered it as proved, that in this case, notwithstanding the redness of the tongue, the administration of the tartar emetic had been attended with advantage. This improvement, however, was but temporary; and two days after, the exacerbation of the fever, and the commencing dryness of the tongue, clearly showed how wrong we would have been in relying on the improvement of the preceding day. We have met other cases in which, as in that now before us, it was not till two days after the employment of an emetic that its bad effects were perceived, as if the tartar emetic, when introduced into the digestive tube, occasioned in some persons a kind of irritation which was not indicated by the symptoms till after the lapse of a certain time. We shall here make a remark which may not be considered out of place, namely, that among the persons to whom tartar emetic was given according to Rasori's method, we have seen some who, after having borne for several days twenty or thirty grains of tartar emetic daily with impunity, began to manifest signs of gastro-intestinal irritation precisely at the period when the employment of this medicine was suspended, or even some time after its use had been wholly discontinued.

Case 64.—*Suppressed perspiration—Remittent fever mild at the commencement; at a subsequent period, dry tongue, diarrhœa, prostration; miliary eruption—The expectant treatment used at first; then purgatives; bitters towards the termination.*

A mason, fifty-three years of age, had immersed himself in cold water, whilst he was in a state of perspiration, on the evening of the 29th of July. He slept well, and felt nothing particular on the next day till about three o'clock in the afternoon. He was then seized with a violent shivering, which was followed by great heat and profuse perspiration during the night. From the 30th of July to the 6th of August he had a similar attack every day; in the morning he was very well, and continued to eat his meals and to work till the hour of shivering. On the morning of the 7th he felt ill; the shivering, which came on at the usual hour, was followed by heat, and not by any sweat. On the 8th he felt a burning heat of skin during the entire day, and kept his bed.

On the 10th he entered the Charité, and presented the following state: expression of the face natural, tongue red and dry, thirst, loss of appetite, constipation, abdomen free from pain, pulse frequent and hard, skin hot and dry, breathing a little hurried; five or six red, lenticular spots, prominent to the touch, on the epigastrium and lower part of the sternum. (Barley ptisan with oxymel, emollient lavement.) In the course of the day the state of the patient underwent no change.

11th. Tongue red and dry, and exhibited a tendency to be incrusted; no stool; pulse hard, moderately frequent; slight moisture; same character of the breathing, spots more numerous. (Same prescription.)

12th. Air of stupor, meteorism, same state of tongue, no stools, disappearance of the spots. (Whey, with tamarinds, broths.)

13th. Great drowsiness, answers distinct; tongue dry, cleft, presenting at its centre an appearance resembling burned cream. The tamarinds had not overcome the constipation. (Half an ounce of sulphate of soda in the whey, barley ptisan with oxymel, emollient lavement, broths.) Only one stool up to the following morning; the patient continued drowsy all the day.

14th. The tendency to coma continued. Same state of tongue. Breathing always a little hurried. Some crepitous râle was heard in different points of the chest. (Blister to the sternum.)

From the 15th to the 20th the state of the patient underwent no change. He had still strength enough to sit up. On the 20th a slight diarrhœa set in: on this same day some *sudamina* appeared on the abdomen; at the same time another eruption showed itself. The lower part of the sternum, the left flank, and left side of the chest were covered with a multitude of small red, confluent patches, surmounted for the most part by miliary transparent vesicles.

On the day after, the double eruption continued, as well as the diarrhœa. The tongue was moist, pulse less frequent.

From the 21st to the 24th the *sudamina* and miliary pustules declined. The tongue was now natural, still the air of stupor did not cease ; the patient seemed both physically and morally benumbed. The crepitous râle, which was heard posteriorly on both sides of the chest, seemed to indicate œdema of the lungs. The pulse still retained some frequency and the skin some heat. The diarrhœa had ceased. Up to this period the patient had taken nothing but some demulcent ptisans. M. Lerminier prescribed the compound hydromel, and a strong decoction of polygala root.

On the following days, under the influence of this new treatment, a very rapid improvement took place ; the crepitous râle ceased, the strength returned, the natural expression of the countenance was restored, and the patient soon left the hospital perfectly recovered.

This affection commenced by a quotidian intermittent, evidently produced by the combined impression of cold and moisture on the skin. At the end of the eighth fit this intermittent fever was changed into a continued fever, with redness and dryness of the tongue and a petechial eruption. Not till fourteen days after the invasion of the continued fever, some diarrhœa set in at the same time that *sudamina* and a miliary eruption appeared. From the simultaneous appearance of these three phenomena we may date the occurrence of a perceptible amendment.

The patient took laxatives several times whilst the tongue was dry, and he was plunged into a state of stupor. Such is the treatment adopted in similar cases by English physicians. Only one blister was applied to the sternum at a time when the respiration was perceptibly impeded. Blood-letting was not resorted to. But when the disease was now become less severe, and when the predominant affection of the patient was a state of languor of the entire system, combined with pulmonary engorgement, recourse was had to tonic treatment. We have seen with what rapidity the crepitous râle disappeared as soon as the polygala was given. Was it not by raising the general strength of the patient, that the serous engorgement of the lungs was removed ? If this latter phenomenon has been considered as a product of pulmonary *irritation*, such a treatment would have been avoided, we should have had recourse to bleeding and to revulsives ; and it is a question with me whether so favourable a termination would have been obtained.

ARTICLE III.

TREATMENT BY ANTIPHLOGISTICS (BLOOD-LETTING AND REVULSIVES).

Case 65.—*Fever ; diarrhœa ; tongue dry ; two applications of leeches to the anus ; one venesection.*

A baker, eighteen years old, of a strong constitution, had supped as usual on the 28th of October. Three hours afterwards he was seized with an intense supra-orbital headach ; he felt himself benumbed ; he then had a violent shivering, which was followed by great heat and perspiration. On the 29th the fever was very high ; the patient went more than thirty times to stool in the course of the day. The abdomen was free from pain. This state continued during the following days. He entered the Charité November 1st, and on the 2nd presented the following state :—

Headach; face red; eyes very bright; general debility; tongue yellowish, and a little dry; thirst; purging as severe as at the commencement; alvine dejections watery, and not accompanied with tenesmus; abdomen free from pain; pulse full, and moderately frequent; not much heat of skin. (Thirty leeches to the anus; barley ptisan, with mucilage; strict diet.)

The diarrhœa was considerably diminished; the patient went but four times to stool in the following twenty-four hours. At night he felt extremely hot, and did not perspire.

On the morning of the 3rd the headach was gone, but the tongue was dry; pulse strong; skin hot and dry. Thus, though the diarrhœa was lessened in consequence, no doubt, of the leeches applied to the anus, the fever had increased. He was bled to the amount of two palettes. The same ptisan was continued, and strict diet enjoined.

The purging was greater than on the preceding day (from eight to nine stools). He was very much disturbed during the night.

On the 4th the fever still continued; the tongue was moist and red; abdomen always free from pain; ten additional leeches were applied to the anus. As those first applied, they had undoubted influence on the purging; he had no stool till the following morning, the 5th of November, which was the ninth day of the disease. He had had a tranquil night; the tongue had lost its redness; the skin was a little hot, and the pulse was scarcely frequent. The patient was infinitely better; the purging did not return; and on the 10th of November he was perfectly recovered.

In this case we see the morbid symptoms at first become aggravated, the fever become more severe, the tongue become red, &c., notwithstanding the very active employment of an antiphlogistic treatment. Thus the leeches did not carry off the disease, which, during their employment, still continued its progress, and became worse. The only improvement was in the purging, and in this case the bleeding from the anus acted more effectually on it than the venesection. We are not certain that the general improvement which followed the second application of leeches was owing to this application.

CASE 66.—*Acute bronchitis; pleurodynia; tongue red; fever; critical sweats—Bloodletting; leeches to the chest.*

A man, thirty-one years old, who had been residing in Paris for the last four years, brown skin, black hair, muscles not much developed, usually in the enjoyment of good health, felt, on the 16th of October, painful tension of the right cheek. He continued his usual work. This tension increased on the following day; he thought himself somewhat feverish; he had headach; an aversion to food. On the 18th the pain of cheek disappeared, but he felt rather an acute pain in the inferior and lateral part of the chest on the right side towards the loins. He kept his bed on the 20th of October. On the 22nd he entered the hospital, presenting the following state:—

Supra-orbital headach; yellowish tint of face; eyes heavy; pains in the limbs; pain in the site of the three last ribs, extending to the right flank and loins, and increased by pressure and cough, but not by the inspiratory motions; tongue red; thirst; bad taste in the mouth; abdomen free from pain; constipation; pulse strong, not frequent; heat of skin moderate; breathing free; slight cough; expectoration that of acute catarrh; percussion sonorous in every part; sibilous râle on both sides below the clavicles (a sign of simple pulmonary catarrh). (Twelve leeches to the right side of the chest; venesection to the extent of two palettes; infusion of violets).

On the 23rd the blood drawn the day before formed into a coagulum of but little consistence, and was not buffed. The patient slept tolerably well; pain of side gone, as also that of the head; tongue no longer red; thirst less; frequent borborygmi in the abdomen; he had had no stool; the pulse was strong, and always a little frequent; slight sweats came on during the night for the first time (on the night of the seventh day).

On the 24th he found himself very well; he still sweated a little during the night; fever altogether gone; appetite returned. (Bourrache oximellée; rice cream; broths).

On the 25th, profuse sweats during the night, but they did not appear on the following days. The patient, complaining of troublesome borborygmi and constipation, took, during two days, two glasses of a purging mixture. He left the hospital on the 1st of November.

The continued fever which forms the subject of this case commenced by a fluxion in the right cheek, which, at the end of three days, was succeeded by a pain in the thoracic parietes and the flank of the right side; at the same time there was fever, headach, loss of appetite, cough, yellowness of the face. Stoll would have called this group of symptoms by the name of bilious pleurisy, and he would have given a vomit; but to us the seat of the pain appeared to be in the external parts of the chest, and the cough was the effect of simple pulmonary catarrh.

The sweats, which came on during the night of the seventh day, and which continued on the following days, seemed to be critical.

The local and general bleeding accelerated the resolution of the disease. The pain of side yielded to the application of the leeches. It is only by mere hypothesis that we could, in this case, give to the fever a very determinate seat or a manifest origin. Now, in practice nothing is more common than such cases; nothing is more common than thus to observe, in the midst of a febrile state, whether temporary or permanent, a rapid succession of several local affections which coincide with the fever, without its being always possible to determine their relation to it, and which are all probably connected by a link which escapes us. An instance of this occurs in the following case, which may be advantageously compared with the case just detailed:—

A young man presented himself at the central Bureau, still bearing, on several points of the skin, traces of numerous furuncles, which he had previously had in succession on the neck, axilla, back, abdomen, perineum, and thighs. Before this eruption he had a swelling on one of the cheeks, without any redness of skin, which he calls a fluxion. When he presented himself at the central Bureau this person was affected with a well marked urticaria, and he stated that he had had a similar eruption several times. He entered the Charité, the urticaria disappeared, and at the same time rheumatism, attended with fever, manifested itself at the three great articulations of the upper extremity of the left side. For this, tartar emetic, in large doses, and bleeding, were prescribed. At the end of five or six days the rheumatism disappeared, but the day after erysipelas of the face came on. It went through its usual stages, and, as no other affection complicated it, no active treatment was employed. The patient appeared convalescent, when one morning he complained of a slight pain towards the middle of the left scapula; a little hardness was observed here without any redness of the skin. On the day after, in this same part, wherein, twenty-four hours before, there was nothing but a slight almost imperceptible swelling, we found an enormous abscess, which in the course of the next twenty-four hours became still larger. The skin was not red, and the pain was so moderate that the patient continued to lie on his back. He then passed into the surgical wards, and we lost sight of him.

CASE 67.—*Remittent fever; diarrhœa; symptoms of Pneumonia; three bleedings employed.*

A locksmith, twenty-three years old, who resided in Paris for the last two months, and ordinarily enjoyed good health, had an attack of indigestion, two days before, after drinking some bad wine. In the night he vomited, and went several times to stool. On the following days the diarrhœa continued; he had an attack of shivering every evening, and perspired at night; his skin was very hot, and he was very ill during the day.

At his admission his face was a little red; tongue foul, slightly red at the point; bad taste in the mouth; abdomen large; skin hot; pulse not very frequent; cough violent and frequent; sputa those of acute catarrh. (Two palettes of blood were taken from him.) Blood not buffed; but the next day the sputa were become viscid, and presented a rust-coloured tint. The chest, when percussed, sounded well in every part; everywhere, too, the respiration was clear; there was but slight dyspnœa; still, from the character of the sputa, the existence of pneumonia was undoubted; the pulse was become more frequent. (A second bleeding.) This blood presented a thick buffy coat; the sputa, which were always viscid, had lost their rust-coloured tint; the fever was high; the tongue red, and showed some tendency to become dry; the diarrhœa continued. This group of inflammatory symptoms was combated by a third bleeding; it presented as thick a buffy coat as the second. The improvement which followed it was remarkable. On the next day (September 21st), the sputa again became those of simple catarrh; the tongue was moist, and of a bright red colour; pulse was moderately frequent; the skin was covered with a little moisture; the diarrhœa had not diminished. The patient left the hospital quite well on the 29th.

Bloodletting was indicated in this case more than in any of the preceding; the vein was opened three times. The first bleeding did not prevent the disease from developing itself; the character of the sputa alone was modified after the second; and it was not till after the third that a manifest and permanent improvement was observed.

Thus, in recapitulating the preceding cases with respect to the therapeutic results which may be deduced from them, we are led to conclude, that, to combat the diseases of the nature of those which form the subject of these cases, bloodletting has not all the efficacy generally attributed to it. Several patients, who were enjoined strict diet and rest, recovered as promptly as those who were bled. In others, after the bleeding, the disease still continued its course, and it was only by degrees that its solution was effected. In others there was but a temporary remission; after which there was again an exacerbation. In no one instance did the disease yield immediately after the bleeding. However, it is reasonable to suppose that, among these patients, there were some in whom the bleeding had the effect of preventing the symptoms from becoming aggravated, if it did not remove them *.

CASE 68.—*At first intense shivering, followed by heat and sweat; stitch in the side; delirium, petechiæ; great prostration—During the first days of the affection leeches to the epigastrium.*

A mason, nineteen years old, residing in Paris for the last two years, of rather delicate constitution, had gone to bed very well on 21st of June. Nothing unusual had happened to him during the day. On the 22nd, when getting up, he felt some headach, general illness, and great lassitude; still he went to work as usual, but violent shivering soon obliged him to desist. He went to bed; the fever was succeeded by burning heat; all the night he sweated profusely. On the five days following he was, he stated, almost constantly in a state of perspiration. He had entirely lost his appetite; did not vomit; bowels were constipated; he had also a slight cough. On the 25th leeches were applied to the epigastrium. Having entered the Charité on the evening of the 28th June, he stated, that, for the last few hours, he felt below the left breast an acute pain, which was increased by pressure. The respiration was impeded; there was considerable fever; he was bled to the amount of three palettes; the blood drawn was covered with a thick buffy coat. During the night the patient raved.

---

* M. Louis has published Observations on Bloodletting confirmatory of ours. (*Archives de Medicine.* November, 1828.)

On the following morning he no longer presented that state of general excitement which was observable the evening before; the pain of side was gone; the respiration was tranquil; cough not very frequent; the sputa presented no particular characters; pulse moderately frequent; but, what was particularly remarkable, was the extreme dejection expressed in his features, a general debility, such that the slightest change of position was very painful; the tongue a little loaded; mouth clammy; the lips and teeth dry; abdomen free from pain; there had been no stool since the last two days; skin not hot; several rose-coloured spots, as large as a flea-bite, and slightly projecting, were scattered over the chest. (Violette oximellée, emollient lavement, broths.) No stool was obtained by the lavement. In the evening there was a profuse sweat; at night the delirium re-appeared.

Next day the expression of the face more natural; intelligence perfect; complete apyrexia. From this time no bad symptom presented itself; convalescence was speedy; and he left the hospital in a few days.

There are some circumstances in this case not devoid of interest. The onset was that of an intermittent fever; yet, whilst in this affection, the shivering comes on most usually in the midst of a perfect state of health, it was here preceded by general indisposition and spontaneous lassitude. The fever continued on the following days without any other local symptom except anorexia and a slight cough. Still, on the sixth day, more marked symptoms came on with respect to the chest, and there was a threatening of pleuro-pneumonia. He was bled; the symptoms of pulmonic inflammation disappeared, and the delirium, which came on during the night, indicated that the brain was now become the seat of irritation. From the succeeding day all signs of inflammation ceased; there was scarcely any fever, and we were particularly struck by the symptoms of great prostration, with the appearance of petechiæ. The prognosis seemed very unfavourable; the return of the delirium on the following night confirmed our fears, but, fortunately, they were not well founded. After two days the prostration was gone; the spots disappeared, the fever entirely ceased, and the patient became convalescent. What would have been the consequence if, in order to combat this prostration and delirium, bloodletting had been employed? In my opinion it would only have aggravated these symptoms, as we have seen on many similar occasions. We may remark that, during the existence of these symptoms, a little broth was allowed. How, in this rapid succession of symptoms, are we to trace the course of a disease such as it is found described in books?

ARTICLE IV.

TREATMENT BY TONICS.

CASE 69.—*Recent arrival in Paris—At first headach; symptoms of what is called inflammatory fever; afterwards nervous symptoms; stupor; involuntary stools; petechiæ—At the beginning bleeding and strict diet; then quinquina and broths.*

A joiner, twenty-two years of age, residing in Paris only for the last two months, with brown hair and small muscle, felt a great pain of head, without any known cause, on the 16th of July. On the following day there was a continuance of the headach; pain in the epigastrium; loss of appetite; nausea; temporary shivering; slight cough; pain in the throat; constipation. He remained in this intermediate state, between health and sickness, up to the 22nd. He kept at rest, and observed strict diet. He entered the Charité on the 22nd.

The next morning his face was flushed; eyes bright and injected; the eyelids, weighed down, were raised with difficulty; violent frontal headach; dizziness; tinnitus aurium indicated a considerable afflux of blood towards the brain; the tongue was covered with a whitish thick coat; there was complete loss of appetite, and some thirst. The abdomen was the seat of general pain, which was increased by taking drink. On the preceding day there had been a stool for the first time since the last six days; the pulse was frequent and full; the skin was hot; there was a slight cough.

This group of inflammatory symptoms was sufficiently marked to indicate a bloodletting. (He was bled to the extent of three palettes; whey with tamarinds; emollient lavement; strict diet.) The blood drawn from the vein resembled a large coagulum without a buffy coat.

The three following days there was no perceptible change; one stool every twenty-four hours.

On the night of the 26th several liquid stools occurred, preceded by slight colics. On the 27th the abdomen was a little tympanitic and painful; the cough, which was very slight on the preceding days, had become more severe and more frequent; the breathing was short; speech accompanied with panting; the expectoration was purely catarrhal; auscultation and percussion afforded no information; the heat of skin was not considerable, and the frequency of the pulse was moderate; some round lenticular spots, resembling the rust of iron in colour, appearing a little prominent to the touch, were scattered over the chest and abdomen. (Twelve leeches to the anus; barley ptisan; mucilaginous mixture.)

On the next day the breathing was more free; cough diminished; the abdominal pain disappeared after the application of the leeches; the spots had increased; thirst more intense; the lips were dried; from ten to twelve stools since the last twenty-four hours.

On the 29th the tongue was red, for the first time, on the edges and at the apex; the pulse was very frequent. (Twelve leeches to the anus.)

On the 30th he had an anxious and distracted air; eyes indifferent to surrounding objects; the lower jaw occasionally performed some lateral movements. When the patient was interrogated, extreme irregularity was observed in his ideas; he appeared to be in a state bordering on delirium; he had had two or three involuntary stools; the appearance of the tongue was now again natural; the spots, confluent in the chest and abdomen, were extended to the neck and arms. (Two blisters to the legs; barley ptisan; emollient lavement; broth.) 31st. Intellectual faculties were now clear; still the air of distraction continued.

August 1st, an air of stupor; diarrhœa diminished. In the course of the day the patient was frequently speaking to himself; the skin was hot, and constantly dry. August 2nd, stupor increased; ideas very dull; loss of memory; speech embarrassed, as if the tongue were dry, yet it was moist and red, as in a state of health; three or four liquid stools, small in quantity; the pulse was readily compressed; in other respects it preserved the same character. The confluent eruption covered the abdomen, chest, and neck; the spots on the arms had disappeared. (Diluent ptisans continued.)

From the 3rd to the 6th the stupor, sinking of the features, and debilitated state of the intelligence, increased; the other symptoms remained the same.

On the 7th the patient took, for the first time, half an ounce of extract of quinquina in a mucilaginous potion. This was continued on the 8th and 9th; and on the 10th a pint of aqueous infusion of quinquina was added to the prescription; broths.

From the 10th to the 13th the purging ceased; one hard evacuation took place every twenty-four hours; the tongue had an excellent appearance; the abdomen was soft and free from pain; the intellectual faculties resumed their usual energy; the air of stupor was gone; the spots had disappeared, and in the parts where they had existed desquamation of the cuticle was observed; the pulse became less frequent. This favourable change took place during the administration of tonics.

On the 14th the pulse had entirely lost its frequency, and the skin its heat. From this time the patient may be considered as convalescent. The extract of quinquina was suppressed, but its aqueous infusion was continued for eight to ten days longer. The patient left the hospital on the 1st of September.

This case presents an instance of a very confluent and very extensive petechial eruption. Such eruptions are but rarely observed. It appeared at the same time as the ataxo-adynamic symptoms, and faded according as the latter diminished. The desquamation of the epidermis, which marked the termination of this eruption, gives it a trait of resemblance to measles or scarlatina. When the patient entered the hospital it would have been difficult to say positively whether any one organ was more the seat of lesion than another. It appeared that the brain, lungs, and abdominal viscera, were all in some measure threatened with inflammation. In the midst of this general derangement of the entire system, the sensation of hunger might no doubt be abolished without this anorexia proving inflammation of the stomach. A sudden mental emotion produces the same effect, and derangement of the nervous system sufficiently explains it. Be this as it may, this group of inflammatory symptoms was combated by a general bleeding. Three days passed on without any improvement taking place. At the end of this time slight diarrhœa set in; then it was towards the thoracic organs that a more active congestion evinced a tendency to be formed, and at the same time some petechiæ appeared. Leeches were applied to the anus; the symptoms of pulmonary congestion disappeared, but the purging increased, and the tongue became red. A second application of leeches was prescribed. The next day the scene is changed. It was the nervous symptoms principally which predominated, and the tongue resumed a natural appearance, which it retained to the termination of the disease. But this return of the tongue to its natural state did not prevent the disease from becoming worse and worse. This rapid succession of symptoms, and more particularly this singular mixture of excitement and debility, are very remarkable. The nervous symptoms improved after the application of blisters to the legs, but these symptoms soon re-appeared with more intensity, and the ataxo-adynamic state became more and more marked. Combated by tonic treatment, the symptoms which characterise this state disappeared whilst the quinquina was administered, and at the same time also the purging ceased.

Case 70.—*At the commencement anorexia and diarrhœa; stupor; delirium; tongue red; petechiæ; application of leeches; improvement—Re-appearance of the ataxo-adynamic symptoms in consequence of an error in diet; grangrene of the blisters; abscess; continuance of the diarrhœa after the cessation of the fever—Tonics.*

A man, thirty-four years of age, of a strong constitution, residing in Paris for the last year, fell ill, and complained of entire loss of appetite on the 18th of April. For this he could not assign a cause. On the following day the illness increased; a feeling of lassitude came on, and slight purging.

On the 25th of April, the day he entered the Charité, his face, which was much injected, presented at the same time an air of stupor which indicated a serious disease. During the night there had been some delirium; there was some petechiæ on the chest, and in smaller numbers on the abdomen; the tongue was red; two liquid stools had taken place during the last twenty-four hours; the abdomen was soft and free from pain; fever was principally indicated by the burning heat of skin; pulse but moderately frequent.

There was to combat in this patient—first, the tendency of blood towards the head, which was indicated by the delirium at night; the intense redness of the eyes and face; and the commencing stupor. (Twenty-four leeches were applied to the neck.)

2dly, intestinal irritation, indicated particularly by the character of the alvine dejections. (Twelve leeches to the anus.)

This double abstraction of blood should also moderate the fever, whatever might be the cause of it. The leeches applied to the neck bled very profusely; still the patient was delirious in the evening and all the night. On the morning of the 26th his intellects were clear; the expression of the countenance was more natural; the redness of the tongue was gone; the petechiæ had in a great measure disappeared; only one stool of considerable consistence had taken place; the fever was not high. M. Lerminier directed the application of two sinapisms to the legs in the evening, with the intent to avert from the brain the periodical irritation of which this organ became the seat every night. (Demulcent ptisans.) The delirium was accordingly much less. On the 27th the petechiæ were more numerous; some increase of the purging (a sinapism in the evening); no delirium. On the 28th, the same state. (Broths.)

In the evening of the 28th the patient procured a little food by some means. 29th, tongue red and dry, diarrhœa increased; the air of stupor had re-appeared, the frequency of the pulse had increased, but it was very readily compressed; the tendency to the adynamic state was evident. Though the exacerbation of the inflammatory state of the digestive passages, under the influence of an error in regimen, appeared to be the cause of the symptoms becoming worse, should blood-letting be attempted? Should we not take into account the diminution of strength as attested by the extreme weakness of the pulse? M. Lerminier did not think it expedient to take any more blood; he ordered two blisters to the legs. On the 30th, the tongue had become moist again. The first three days in May, it became dry again; the prostration of strength went on increasing; the alvine evacuations were involuntary; the pulse did not rise; the petechial spots continued; the intellects were intact. (Barley ptisan, sinapisms, broths, a small quantity of wine.)

On the 4th, aqueous infusion of quinquina sweetened with syrup of quince. From the 5th to the 12th this medicine was continued. During this time the strength of the patient was observed to improve, the purging was moderated, the features began to recover their normal state, the tongue and lips became moist and red, the tongue began to throw off the black incrustation with which it was covered, the pulse began to improve, and the petechiæ to disappear. On the 17th, the patient had scarcely any fever; he had had but one stool during the last twenty-four hours; but the blistered surfaces had a greyish aspect, and evinced a tendency to become gangrenous. They were covered with quinquina powder. This bark was continued internally till the 22nd. The blisters soon assumed a red appearance and became dry. The patient was going on very well in other respects. At this time three small abscesses existed at the union of the right buttock and the thigh; they were opened, and a considerable quantity of good pus was discharged from them. They were cicatrised on the 28th. Still the pulse retained a slight frequency which seemed to survive all local lesion. On the night of the 28th a very profuse sweat came on. Up to this period the pulse had continued remarkably dry. On the 30th there was no sweat, but slight diarrhœa came on, which continued up to the 3rd of June. The patient continued to improve, and left the hospital on the 5th of June.

The patient in this case was treated according to the antiphlogistic method, as long as the general signs of excitement continued. This method was at first successful. A relapse occurred in consequence of an error in regimen. Blisters then seemed to effect a useful revulsion on the intestinal tube; but they did not prevent the debility from increasing. As soon as the latter became the prevailing symptom, the quinquina was given. At the time we began to give the Peruvian bark, the patient was in a very alarming state, and during its use all the bad symptoms disappeared. The surface of the blisters seemed on the point of becoming gangrenous, when a tonic treatment was tried; the dark colour which caused us to apprehend it had disappeared during the internal and external employment of the quinquina. We have, however, so often seen this kind of treatment either fail, or prove injurious under similar circumstances, that we shall content ourselves, in this case as in several others, to look upon the employment of the tonic treatment, and the improvement of the symptoms as coincident, without establishing between these two facts the relation of cause and effect. Observe, however, how much has been published concerning the happy results of the employment of quinquina in typhoid fevers. If it were sufficient to count facts in order to decide a question, we should be but little embarrassed, for we might find at least as many of these facts in favour of the employment of quinquina as in favour of bloodletting. Read De Haën, see how many facts he relates, in which the petechiæ, prostration, involuntary stools, delirium, convulsive movements, subsultus tendinum, irregularity of the pulse, burning heat of skin, &c., disappear under the influence of this medicine.

Independently of the treatment, this case may afford instruction by reason of some of the phenomena presented by the disease. During the entire course of the disease, the skin continued very dry. No phenomenon which could be called critical had taken place, when convalescence already seemed to commence. Still the pulse retained a frequency, which seemed to indicate that no crisis had as yet come. Then several abscesses appeared, which the ancients would not have hesitated to consider critical. They would have found in this case the confirmation of an opinion of Hippocrates, who considered abscesses forming towards the termination of acute diseases as very favourable, particularly when seated in the lower extremities.

The ancients also said that abscesses most frequently did not appear till after other crises, when the latter had been insufficient or incomplete. Here, on the contrary, it was the first phenomenon which appeared; the rapidity of their development and of their termination would have been considered as the sign of a favourable crisis.

Scarcely were these abscesses closed, when the skin became covered for the first time with a profuse sweat, and it was only after the new crisis that the pulse entirely lost its frequency. This sweat appeared towards the fortieth day. This fact would be calculated to confirm Huxham's assertion, who stated that he had never seen any typhoid fever accompanied by a perfect crisis, before a sweat more or less profuse had supervened. But in how many other cases have we not ascertained a favourable and complete termination of these diseases without any sweat having appeared? The physicians of preceding ages would have considered as a third critical movement, the diarrhœa which appeared on the 30th of May, two days after the appearance of the sweat. Guided by the aggregate of the favourable circumstances which preceded, accompanied, and followed the establishment of this diarrhœa, they would unquestionably have made reference to it. The first of the cases placed by Ræderer and Wagler after their general history of mucous fever, presents to us the well marked example of a continued fever, which ceased on the 14th day, at the same time that a purging set in; from this time the febrile disturbance no longer appeared.

The petechiæ which existed at the time of the patient's admission, disappeared in a great measure after the abstraction of blood. The disappearance of those spots coincided with a perceptible amendment in the general and local symptoms; and when on the next day they again appeared, their reappearance did not seem to exercise the least influence.

CASE 71—*Residence in Paris, of a recent date—At the commencement, pain in the epigastrium; loss of appetite; then adynamic symptoms; tongue black; petechiæ; last degree of prostration, &c—Successive employment of blood-letting, blisters, camphor, quinquina, and calomel—Amendment slow.*

A young man, 20 years of age, of a delicate constitution, and scarcely presenting any signs of puberty, had been residing in Paris for about a year. Since that period he had been in great want, and was badly fed. Still his health was tolerably good till the beginning of November. He then began to feel an habitual pain in the epigastrium; his appetite was lessened, his strength was evidently sinking. He continued however to remain at the corner of the streets, exposed to all the inclemencies of the weather. It was only the last two or three days he was obliged to keep his bed; he entered the Charité on the 29th of November, and on the 30th presented the following state:—

Face emaciated, yellowish, expressive of dejection and distress; eyes heavy: evident commencement of prostration; answers distinct but slow. Some subsultus tendinum of the left hand; tongue already dry and brownish at the centre, but moist and of a cherry-red colour at the edges and apex; intense thirst, sensation of heat in the mouth; slight pain in the epigastrium on pressure; the rest of the abdomen soft, and free from pain; diarrhœa for the last two days only (five or six liquid stools in the twenty-four hours); pulse frequent and weak; skin hot and remarkably dry; breathing hurried, cough frequent and dry. This patient was far advanced in an adynamic state; the dulness of his eyes, his eye-lids weighed down, his countenance expressive of distress, the difficulty of his movements, and above all the debilitating circumstances which had preceded his present state, all seemed to point out that the indication was to raise his exhausted strength; but there existed at the same time a two-fold irritation of the lungs and alimentary canal. Should this be first combated? Might it not be apprehended, that, by neglecting it, it might concentrate the remainder of the patient's strength on the inflamed organs, and thus increase the general debility? But admitting the necessity of first combating this irritation, should we only endeavour to remove it by derivatives and irritating revulsives? had any effort been made to attack it directly by blood-letting? M. Lerminier determined to try what effect would be produced by the latter means. Twenty leeches were applied to the anus: they bled profusely; no perceptible change came on in the course of the day. In the night the patient became delirious. On the morning of December the 1st, the intelligence was intact; but the air of stupor was still more marked than on the day before. The abdomen was covered with numerous red spots, of a pale red colour. The state of the tongue was not changed; he had had only one stool. The pulse was very weak, regular, and 112; the respiratory movements were twenty-nine in the minute. Cough still continued. Subsultus increased.

The derivative bleeding from the anus seemed to have diminished the intensity of the inflammatory symptoms of the chest and abdomen; but the debility of the patient went on increasing. The delirium and subsultus indicated at the same time an exaltation, or, more properly speaking, a perversion of the functions of the nervous system. However, if these different symptoms, as also the prostration, had been the result of inflammation of the digestive passages, should not the evident diminution of the latter have been accompanied with a general improvement in the state of the patient? Now the patient was evidently not so well as the day before. Two blisters were applied to the legs. A camomile lavement was given, with the addition of twelve grains of camphor. Nothing was directed to be taken internally but barley ptisan, acidulated with tartaric syrup. The night was more tranquil than that preceding it.

Dec. 2. The air of stupor was diminished; the tongue was moist and red; the abdomen soft. The lavement was not returned. The subsultus and petechiæ were increased. Some petechiæ on the chest. There was an evident improvement, which might fairly be attributed to the plan of treatment. The patient took in the course of the day a second camomile lavement, with the addition of twenty-four grains of camphor. In the evening his legs were covered with sinapisms (barley ptisan sweetened). At this time the lavement was returned a little time after it had been taken. The patient raved a great part of the night. On the 3rd, though his answers were distinct and precise, still he was heard to speak aloud from time to time, and rather incoherently. The adynamic state went on increasing; the tongue again became brown; skin still dry (mineral lemonade, two more blisters to the thighs). At three in the afternoon a general and profuse sweat took place. Still the state of the patient, far from being improved, appeared worse on the next day than ever. The countenance was cadaverous, tongue black and dry, as also the teeth and lips; the abdomen became swollen; no purging. The breathing was again hurried; the pulse could scarcely be felt; the ideas became disturbed at intervals (aqueous infusion of quinquina with oxymel, camomile lavement with twelve grains of camphor; six packets of camphor and nitre,* mineral lemonade, one cup of wine). On the 5th he was in the same state; the same prescription was ordered. On the 6th he no longer seemed to understand the questions proposed to him. He pronounced with hesitation some unintelligible words. The petechial spots continued; the respiration had now become slower.

On the 7th and 8th nothing new occurred. The patient seemed to be reduced to the last stage of prostration. Death appeared close at hand (the same medicine continued). On the 9th, twelve grains of calomel were given to overcome the constipation; he had one stool. To his other drinks we added a decoction of polygala, sweetened with syrup of orange-peel. The pulse, which was very small, was extremely irregular. From the 9th to the 13th the petechiæ disappeared. The strength seemed to rise a little. On the 14th the aspect of the face was more natural, the eyes had more expression, the intellects were not so dull, articulation was easier; the tongue, which was moist, was brown only at the centre; he could put it out of his mouth with considerable facility, which he could not do on the preceding days. A slight purging existed (some broths were now allowed). During the night of the 16th he was extremely agitated, and some convulsive movements took place. From the 17th there was a progressive improvement, which was slow however; this was accounted for by the occurrence of a purging, which continued for a considerable time, and which did not appear till the time nature seemed commencing to proceed towards a cure. The aqueous infusion of quinquina was continued till the beginning of January. At this time the countenance of the patient was very much improved; he was gaining flesh, and had a great appetite. He left the hospital on the 15th, perfectly recovered.

---

* Each packet contains six grains of camphor and six of nitre. One is given every third hour.

Here is a case in which a patient, whose state was almost desperate at the time he began to take tonics, was restored to health according as he took the quinquina, polygala, camphor, wine, &c. During the employment of these remedies we saw the tongue become moist, the skin lose its burning heat and dryness, the intelligence recover its clearness, the convulsive movements disappear, and the strength return. And yet how very unfavourable the prognosis was! The countenance was for several days that of a man in the last agony, and experience has proved that this state of the countenance is almost always fatal. We may here say, with Hippocrates, *In acutis morbis non omnino tutæ sunt prædictiones, neque mortis, neque sanitatis.*

We read in Grant (*Researches on Fever*) a case calculated to prove that certain individuals carry in them a peculiar disposition to adynamic symptoms, from the moment they become affected with any disease whatever, though not very violent. The subject of this case is a young girl who, two years after having had typhoid fever with epistaxis and petechiæ, was inoculated at the same time with her brothers and sisters. In the latter the variola which supervened terminated favourably and mildly. In the young girl, on the contrary, the cuts in the arm were observed to become livid, to puff up, and exhale a bloody sanies. On the seventh day numerous petechiæ appeared, and there were observed all the symptoms of a putrid fever, which complicated the variolic eruption, and interfered with its course. Is it to be supposed that in such a case we should have recourse to an antiphlogistic mode of treatment? Nothing was more variable during the entire course of the disease than the state of the respiration. We found it from one day to another easy or painful, slow or very much hurried. M. Lerminier at first apprehended the existence of inflammation of the pulmonary parenchyma; but these rapid alternations soon appeared to him entirely connected with the state of the nervous system. This was not the only time we observed a similar disturbance of the respiration in individuals affected with bad typhoid fevers, and after death we found the lungs perfectly healthy. In other patients, on the contrary, whose breathing had always been very easy, the post mortem examination discovered pneumonia to a greater or less extent.

Is it not also a very remarkable phenomenon, however usual in other respects—I mean the excitement of the nervous system, as attested by the delirium, subsultus, &c., whilst the other systems were in a state of debility? It is thus that, in severe hemorrhages, we see patients, though exhausted by the enormous loss of blood which they have suffered, die often in the midst of convulsions more or less violent. Did the camphor in this case contribute to calm the excited or perverted action of the brain and its appendages? We may observe that an evident improvement succeeded the administration of the first camphor lavement, which was all retained, whilst the symptoms partly reappeared after the second lavement, which was partly returned.

If the physiological action of camphor is well ascertained, such unfortunately is not the case with its therapeutic properties. The histories of poisoning by camphor in the human species, and experiments made on living animals, tend equally to prove that this substance stimulates the brain very much, and yet it is often prescribed for the purpose of calming the nervous system. At other times it is, to be sure, administered under the title of a diffusible stimulant. What contradictions! Is camphor often effectual only in as much as it opposes one stimulation to another, by changing the mode of action of the nervous system; as several medicines called antispasmodic seem to do? Again, has camphor, like several other substances, a different action according to its different doses? If we consult authors we shall find them very little agreed among themselves. Thus Cullen tells us, that after having administered camphor a great number of times, he was not yet certain whether this medicine was useful or injurious. Hoffmann is more positive; he considers camphor combined with nitre as one of the best medicines that can be given in all cases of malignant fevers. I am inclined to think that it is with camphor as with digitalis. If the researches of a great number of medical men with respect to the therapeutic properties of these substances have oftentimes led to the most opposite results, it is because the observers have not pointed out with sufficient precision under what combination of circumstances they had used them. Neither has sufficient regard been paid to the differences which camphor must present in its mode of action according to the state of the organs, and the temperaments and dispositions of the individuals. We have observed, for instance, in some persons possessed of great nervous susceptibility, a peculiar kind of stimulation made on the brain by camphor. These persons, after taking camphor in the form of lavement in rather a moderate dose (twenty to thirty grains), felt themselves suddenly possessed of extraordinary lightness; they fancied themselves going to fly, according to the phrase adopted by them all. This singular effect, of which I myself have seen an instance in a young Englishman, lasted for some hours, and gradually disappeared.

The petechiæ in this case were very numerous. They appeared before any species of stimulant treatment had been employed. It was not the latter then that produced them, as was supposed by De Haen.

Case 72.—*Residence in Paris, of a recent date—At first symptoms of what may be called inflammatory fever; delirium after blood-letting—Subsequently symptoms usually called bilious; tartar emetic; on the day after the administration of the latter medicine, severe symptoms resembling those of an attack of typhoid fever; return of this attack on the following days; quinquina at first given as anti-periodical, then as a tonic.*

A young man, eighteen years of age, of rather a delicate constitution, light coloured hair, and flaccid muscle, always enjoyed rather good health; he was a resident in Paris for about three months, and was not subject to any privations. May 11th, without any known cause, he felt on awaking a state of general illness, and some pain of head; there was a bitter taste in his mouth. In the course of the day he had some shivering. On the 12th he was confined to bed; 13th, entered the Charité; and on the 14th he presented the following state:—face and conjunctiva injected, skin halitneuse, pulse frequent and full, tongue whitish, red at the apex, not much thirst, abdomen soft and free from pain, one stool of good consistence in the twenty-four hours. This person presented a group of inflammatory symptoms, which called for bleeding. In localising the disease one might consider it gastritis, and from this derive all the other symptoms as so many sympathetic phenomena. He was bled copiously; barley ptisan with oxymel was prescribed. The blood drawn from the vein united into a large clot of but little consistence, and greenish on its surface. During the day the state of the patient continued nearly the same; he had some nausea. In the night his sleep was disturbed by the most incoherent dreams; he had but one stool.

On the morning of the 15th the fever still continued, tongue not so red (thirty leeches to the anus). In the night the patient was very much disturbed, and was in a state bordering on delirium. On the 16th he complained of an intolerably bitter taste, he had frequent nausea and but little thirst; the tongue was covered since the day before with a thick yellowish coat; there had been no stool; the red tint of the cheeks contrasted with the yellow tint of the parts around the alæ nasi, the lips, and the conjunctiva; the pulse was constantly very pregnant and full, skin hot and dry. Thus the state of the patient had undergone a perceptible change since the day before. The decidedly inflammatory symptoms of the preceding days was now succeeded by that combination of symptoms usually called bilious. M. Lerminier prescribed two grains of tartar emetic in a pint of veal water; but as the fever was still high, he ordered the application of thirty leeches to the anus previous to the emetic being taken.

The patient did not vomit, and went but once to stool. On the next day, the 17th, the tongue, divested of its yellowish coat, had resumed its red appearance; his state was the same in other respects (barley ptisan, with oxymel). In the evening the patient, who had passed the day tolerably well, was attacked with violent shivering and great dyspnœa. At eight o'clock the shivering no longer existed; but the patient, devoured by a burning heat, was now in an extreme state of prostration; it was only at intervals he answered questions, and at intervals he was completely delirious. The respiration was high and hurried, the pulse small, concentrated, and irregular; great subsultus in the fore-arms. Thus the patient had suddenly passed from a state not at all alarming to one which was considered as hopeless by those who saw him in the evening. However, on the morning of the 18th, we found him not so bad. The respiration was more free; the strength was raised; the intellects were again clear, the subsultus tendinum was less; the pulse, which was regular, retained its smallness; the countenance was still expressive of great depression, the skin was covered with a gentle moisture; the abdomen was tympanitic, no stool had taken place; the bladder, distended by an enormous quantity of urine, projected considerably above the pubis; we were obliged to draw off the urine; a blister, made with a mixture of liquid ammonia and axunge, was applied to each thigh. He was in the same state up to the 19th, at six in the evening. Then there was a return of the same symptoms as on the 17th, but with much greater severity. At nine o'clock the patient seemed as if struck with apoplexy; there was total loss of consciousness; the eyelids remained depressed over the eyes; when they were raised, the globe of the eye, which was fixed and immoveable, seemed insensible to the impression of light; the nostrils were forcibly dilated at each inspiration, and each expiration was accompanied with a passive dilatation of the cheeks; the tongue, which was perceived at the bottom of the mouth, appeared dry and brown at its centre; the abdomen was very tympanitic; the pulse was so frequent that it could not be counted. On the next day, the 20th, there was an amendment similar to that which we had already observed on the 18th, the patient had recovered his consciousness, but he still retained a very remarkable air of stupor; as on the 18th, the skin was moist. This periodical return of the same symptoms under the tertian type, the shivering which ushered in their invasion, the moist state of the skin which became manifest according as the severe symptoms subsided, might incline one to suspect the existence of a pernicious remittent fever. The second attack had been more violent than the first; there was some reason to apprehend that the third would prove fatal.

On the 21st, the day on which the third accession should show itself, twelve grains of sulphate of quina were given by the mouth, ten hours before its expected invasion, and one ounce of powdered quinquina, in the form of lavement. In the evening the paroxysm did not return. However, the patient was far from being out of danger; the adynamic state was more and more marked; the black colour of the tongue had progressed; considerable purging set in; the quinquina was still continued in the form of lavement, in the dose of half an ounce every day up to the 25th, with the view of preventing any return of the fit. Since the 20th the surface of the blisters had taken on a brownish tint, and on the 23rd they were covered by a large eschar. The paralysis of the bladder still continued, and the urine was drawn off by the catheter. On the 25th, the tongue, lips, and teeth were covered by a thick black crust; the abdomen was very much distended; five or six liquid stools were passed in bed. There was at the same time an acrid heat of skin, great frequency and smallness of the pulse, which was easily compressed; a well marked air of stupor; great dulness of the intellectual faculties; total loss of memory; extreme muscular debility; eschars on the blistered surfaces, on the sacrum, and on the great trochanter of the left side; paralysis of the bladder. We no longer apprehended a return of the paroxysm. In this state of things should our attention be directed only to the palpable inflammation of the alimentary canal, and should we order merely demulcent medicines? Should we rather consider the general state of the strength, the real absence of which seemed to be indicated by several of the symptoms? Should we admit with Brown, that the period of general excitement had been succeeded by a period of collapse; or say with M. Broussais that the strength was not really absent, but that it was concentrated on the digestive tube? Even admitting this latter opinion, would we have been warranted in rejecting tonics and excitants? Are there not several cases of external inflammations, where tonics are employed with advantage, as well internally, as on the inflamed surfaces themselves? M. Lerminier prescribed a camomile lavement with the addition of five drops of essential oil of juniper; citric lemonade for his drink; some broths, a pint of decoction of polygala; another pint of decoction of two drachms of angelica root, with the addition of two ounces of syrup of violet. It is known how much Hildenbrand cried up the beneficial effects of angelica root in typhoid fevers; he preferred it as less expensive, and at the same time as more effectual than contrayerva and seneka root. Embrocations of camphorated oil of camomile were applied over the abdomen; twenty-four hours after this treatment was commenced there was a most evident improvement in every respect; on the 27th, the aqueous infusion of quinquina was substituted for the decoction of polygala, and mineral for citric lemonade. From the 28th of May to the 6th of June, a rapid improvement took place in all the symptoms. During all this time, however, there was no sweat, nor any phenomenon which could be considered critical. On the 6th of June every thing promised speedy restoration, except the ulcer on the great trochanter, which was every day enlarging; the profuse suppuration from it prevented the patient from recovering strength. The aqueous infusion of quinquina was replaced by six ounces of quinquina wine. Innumerable cases attest the beneficial effects of this substance in all cases of profuse suppuration, without much general re-action. De Haen in particular has noticed the advantages of it (Rat. med., pars undecima, caput primum). The quinquina wine was continued in the dose of from six to eight ounces every day during the month of June and commencement of July. The ulcerations ceased to extend, all febrile symptoms gradually disappeared, and the suppurations from the ulcer on the great trochanter being very inconsiderable, the quinquina wine was suspended. On the night of the 15th of July, from eight to ten varioloid pustules appeared on the buttocks. On the next day some were observed on the arms and face. Having been red and conical at first, they were already white about thirty hours after their appearance; four or five of them were depressed at their centre. Some of these were remarked to be confluent in the lumbar region; at the end of six days they were all dried. The eruption was not accompanied by any febrile disturbance; it resembled varicella very much. The patient bore the marks of having been vaccinated. During the last fifteen days of July the feet became œdematous. This passive infiltration was combated by the bitter diuretic wine of the Charité, and disappeared according as the strength returned. He went out on the 6th of August.

We have endeavoured to point out, in the course of this case, the circumstances which rendered it remarkable. We saw that the inflammatory symptoms which existed at the commencement were met by repeated and copious bleedings; that at a later period an emetic was administered, which produced no evacuation; and on the following day an exacerbation showed itself for the first time, which gave to the disease the character of a pernicious remittent fever. The second exacerbation was still more alarming; the quinquina was then given with success. I shall not here inquire how the good effects of the quinquina in this case can be explained; I merely state the fact, remarking that innumerable instances of analogous cases are to be found in books. Would the same success have been obtained if gastro-intestinal irritation had played the principal part in the group of frightful phenomena which characterised the attack? The onset of the disease was probably in this irritation, but certainly the entire disease did not reside in it. When there no longer remained any thing but the symptoms of a most severe adynamic fever, it was still a highly tonic treatment that was opposed to these symptoms; during this treatment, the tongue, which was dry and black, soon returned to its natural state. When profuse suppuration was exhausting the patient, it was by means of quinquina, given in large doses, that the strength was kept up. We should here remark the varioloid eruption and the œdema, which came on during convalescence: this œdema, the result of general debility, disappeared as the strength was re-established.

CHAPTER III.

RESUMÉ (*).

ARTICLE II.

ETIOLOGY.

ARE there certain causes which may be considered, with some reason, as having produced the diseases of which the preceding cases afford instances?

Among the individuals who form the subjects of our cases, several had suffered great mental distress; others had been exposed, for a longer or shorter time, to all the hardships of want; being deprived of work, they had had but an unwholesome or insufficient food to live on:—some were distressed with labour; they had borne up against want of sleep for several nights; others had been guilty of frequent deviations from regular regimen, or had indulged in different species of excess; but in the greater number none of these influences had acted,—they had been always well fed; they had always worked without being fatigued, and they had never committed any excess. The results at which we arrived on this head agree with those obtained by M. Louis. He cites but a small number of cases in which bad diet was one of the circumstances which preceded the development of the disease. In some others excessive fatigue and mental distress had acted, but in the majority nothing proves at least that these different influences performed a part in the production of fever.

What we say of patients in the hospitals, we might also say of other classes of society. I shall take for instance our young medical students. Miasms, arising from the dissection-room, have been looked on as one of the causes which render typhoid fever so common in them; yet in a very considerable number of them I may assert that the disease manifests itself before they have frequented the dissecting-room. Bad diet and irregular habits have also been advanced as causes of sickness in these persons, and yet I have very often seen young persons affected who were well fed, and whose conduct had been very regular.

There is another circumstance, much more general, which may be observed in our cases, as well as in those of MM. Petit and Serres, Bouillaud and Louis, namely, recent arrival in Paris. Among the individuals who form the subjects of the preceding cases there are several who had been residing in Paris only for some weeks or months at the time they became sick. In general it is not at the commencement of persons' residing in Paris that the health becomes deranged; it is more frequently after a residence of from six to fifteen months. It is about this period that we have most commonly seen students in medicine or law attacked, as also young mechanics, who come to seek for admission into the several hospitals.

---

* This resumé more particularly concerns our cases of follicular enteritis.

Yet whilst we admit that persons who have but recently arrived in Paris are more exposed than others to be attacked with the disease now in question, we do not intend to infer from this that it attacks exclusively persons of this class. We have cited a considerable number of cases of persons who had been residing in Paris for a great number of years, and who presented on the one hand the different symptoms of typhus fever, and on the other hand the particular lesion of the intestinal follicles. During the summer of 1829 we saw, at the Central Bureau, a considerable number of individuals who presented all the symptoms of typhoid fever in different degrees of severity, and one-third at least of these persons had been residing in Paris for several years. We have seen this same disease attack medical students who had been living in Paris for five or six years.

Is typhoid fever, when once developed, capable of being propagated by contagion? In latter times Dr. Bretonneau, M. Gendron, and some other medical men, have maintained that dothinenterite was a very contagious disease: we do not deny the facts cited by these writers; but what we confidently assert is, that in Paris, either in the hospitals or out of them, we never recognised in this disease the slightest appearance of a contagious character. In the hospitals we do not see it transmitted from the individual who brings it from without to those who are lying in the beds next his own; neither do we see that the patients who lie in the bed previously occupied by a person who has either recovered from, or has died of a dothinenterite, are attacked by it. Neither are the physicians or medical students who come there attacked with it, more particularly those who have had to come in contact with patients labouring under the disease. Out of the hospitals what circumstances are more favourable to contagion than those generally found combined in the case of medical students who attend their companions when affected with typhoid fever? Shut up in a room, which in general is very small, they pay them the most assiduous and devoted attention night and day; if the affection were contagious, almost all of them would contract it, and yet we do not remember to have seen the disease even once arise in this way in a healthy individual. We have frequently inquired whether the bed or room occupied by a patient affected at the time had been recently occupied by others who had also had dothinenterite, and we found that this occurred but very rarely; so that we were then at liberty to suppose, that if two individuals attacked with one and the same species of disease had succeeded each other in one and the same place, it was nothing but mere chance.

Persons of the most opposite constitutions are equally affected by the disease in question. It would be a great mistake to suppose that it attacks, in preference, persons of a delicate constitution, whose blood is impoverished, whose muscular system is but badly developed, and in whom the lymphatic temperament seems to predominate. Far from it. The disease appears probably more generally in persons who are of a florid complexion, whose muscular system is well developed, and appears to indicate considerable strength. It is frequently in such persons that, after a few days' illness, an adynamic state is seen to supervene, which does not appear to be always the result of mere oppression of the strength, so that it must not be supposed that what is called *force of vital resistance* is always accurately indicated by the state of the muscular system; it is represented much more by the activity of the nervous system; and this activity is very frequently in the inverse ratio of the apparent energy of the locomotive system.

In this respect the observations made by MM. Bouillaud and Louis are entirely confirmatory of our own. Among the persons whose cases we have given there are several who presented all the traits of what is called the sanguineous temperament; several had a brown skin, and the appearance of great muscular strength; they seemed to have considerable embonpoint, and their nutrition did not appear to have at all suffered.

All ages are not equally exposed to present the different groups of symptoms which characterise continued fevers. The result of our own observation, as well as that of other authors, is, that they are most common from the age of twenty to that of thirty. From thirty-five to old age they become more and more rare: then, after the age of seventy, we find adynamic fever to appear again. It is in the midst of the symptoms which characterise it that a considerable number of old persons die, those particularly who, till then, had enjoyed good health, and who seemed to have worn out their vital energy by little and little, without there having been any deep-seated lesion of any organ in them.

Old persons, then, as well as young, present rather frequent instances of adynamic fever. But in them the organic lesions, of which this fever is either the effect or the complication, are not always similar to those observed at a less advanced period of life. Thus, in young persons, out of ten cases of what is called adynamic fever, there are nine at least in which the principal lesion found in the dead body is a dothinenterite. In old persons, on the contrary, dothinenterite is uncommon; but, in its absence, symptoms exactly similar to those which it produced in youth appear with the greatest facility in consequence of any other lesion, whether of pneumonia or of simple erysipelas, or a slight phlegmon, or disease of the urinary passages, &c. Their tongue becomes dry and black, without there being in them any intestinal lesion appreciable after death. Thus, here is a case where the symptomatic form of a disease remains the same, though there is no longer any identity in its anatomical form.

ARTICLE II.

OF THE STATE OF THE DIFFERENT ORGANS AFTER DEATH AND DURING LIFE.

DIGESTIVE TUBE.

First—*Lesions found after Death in the Digestive Tube.*

We have to examine these lesions with respect to their constancy, their frequency, their seat, their nature, their intensity, and, lastly, with respect to their connections with the symptoms.

A.—*Constancy of the Lesions of the Digestive Tube.*

Every time an individual has died of one of the morbid groups, which characterise one of the essential fevers described in the Nosographie Philosophique, do we find the digestive tube diseased in the dead body? Facts answer this question in the negative. If the cases given by us in reference to this point be consulted again, there will be found instances of what are called adynamic or ataxic fevers, in which the digestive tube did not present, after death, any kind of appreciable lesion. M. Bouillaud has cited similar cases. The first case in his *Traité des Fièvres* gives the history of an individual who died rapidly with all the symptoms of intense inflammatory fever (*febris ardens,* or *causus* of the ancients), and in whom no other lesion was found in the digestive tube except some streaks of a deep red colour towards the splenic extremity of the stomach; but observe, the post mortem examination took place during the heat of July, more than twenty-four hours after death, and persons versed in the study of pathological anatomy know full well that, if the body of a person who has died of an acute disease under such circumstances be opened, nine times out of ten a similar state of the stomach will be found.

In the twenty-fourth case of the same work there is mention made of a person who, five days after having suffered comminuted fracture of a limb, died with all the symptoms of what is called putrid or adynamic fever. There was no morbid change discovered in the digestive tube; neither was there any lesion in this tube in the persons who form the subject of the twenty-sixth, twenty-seventh, twenty-eighth, and twenty-ninth cases, and who, being attacked with different local affections (erysipelas, external gangrene, phlebitis, &c.), also died with the symptoms called adynamic, and particularly with dry tongue, and teeth covered with black sordes.

M. Louis, who considers lesions of the intestinal follicles as the anatomical character of typhoid fever, has, however, published some cases in which neither this lesion, nor any other worth remarking, was found in the digestive tube in persons who, during life, would certainly have been considered by the Pinel school as labouring under adynamic fever. Thus, in the fifty-first case of his work, M. Louis thus describes the state of the digestive tube of an individual who died on the eleventh day of a disease, during which he presented the following symptoms, viz., delirium, stupor, meteorism, involuntary stools, his tongue being at first dry and râpeuse, then black and incrusted.

" The gastric mucous membrane was of a greenish tint, very slightly softened, its thickness being proportioned to its size. The small intestine was moderately distended with gases, and contained a little yellow bile and mucus. Its mucous membrane presented the same colour in some points, and was in general whitish, of a natural thickness and consistence, except in the four last feet of the ileum, where it was a little softened, all the elliptical patches were healthy. The large intestine contained some fæces; its inner membrane was greenish or yellowish, and, except that, perfectly healthy. The mesenteric glands were very small."

The individual whose history is detailed in the 52nd case of M. Louis's work presented, still more than the preceding, the combination of all the traits of what is called putrid, ataxo-adynamic, or typhoid fever; or, if it be preferred, of dothinenterite. At the onset there was loss of appetite, vomiting, diarrhœa; then intense pain of head, delirium, coma, great muscular debility, eschars on the sacrum, spots, as it were scorbutic, on the skin, involuntary stools, meteorism, clammy dry tongue, yet the following is the state in which the digestive tube was found:—

" The stomach, of moderate size, contained a little bile and some mucus; its inner surface was slightly spotted with red through its entire extent; the duodenum was healthy; the mucous membrane of the small intestine was pale, and perfectly healthy through its entire length; the same may be said of the elliptical patches of the ileum, all thin, white, or slightly speckled with grey, as is observed in the natural state; the mucous membrane of the large intestine was white, softened in the right colon; then it increased all at once in consistence; the mesenteric glands were pale, small, and healthy."

At the commencement of the year 1829, M. Dalmas examined in the Charité the body of a person, fifteen years of age, who had been considered as labouring under typhoid fever, and whose digestive tube was found perfectly healthy.

Dr. Martinet met a very remarkable case in the Hotel Dieu, in which, to explain the symptoms of the ataxo-adynamic fever of Pinel, nothing was found but softening of the liver, and nothing in the digestive tube.

Dr. Neumann, physician of the Charité at Berlin, did not appear to be acquainted with the works of M. Bretonneau on Dothinenterite, when, in 1816, he published a paper on a species of fever which he considered as prevailing every year epidemically in Berlin, and which he compared to typhus. The general description which he gives of it is what might be drawn up by combining what our own cases present in common with those of MM. Petit, Bouillaud, Louis, etc. In those who died, M. Neumann says he found, towards the termination of the small intestine, patches and ulcerations; in a word, that group of lesions which constitute our intestinal exantheme, or the dothinenterite of M. Bretonneau. Still, though these lesions may have been met with by M. Neumann in the majority of the cases, there are some in which he did not find them; there was, on the inner surface of the intestine, merely a slight injection of the capillaries; sometimes even this injection was absent, and the post mortem examination presented no trace of disease in the digestive passages.

In the febrile disease, which is endemic in several parts of Great Britain, and which, in its symptoms, bears the greatest resemblance to our continued fevers, there have been frequently found, within the digestive tube, alterations similar to those presented to us in the greater number of our cases. However, in some cases, Dr. Alison, of Edinburgh, to whom we are indebted for an excellent description of this disease, states, that he had not met with either exanthematous patches, ulcerations, or any other lesion in the digestive passages. We are bound to place so much the more confidence in the researches of this physician, as, at the time he was engaged in them, it was after leaving Paris, where he had been present at several post mortem examinations of persons who died of typhus fever, and because, at Edinburgh, he examined several bodies, expecting to find these same patches, these same exanthemes, and this same redness, which he had seen at Paris, and of which he had read the description in French works.

On comparing with these facts, seen by different persons and in different places, the facts which we have ourselves collected and cited in all their details in our cases, we think ourselves warranted in laying down the following proposition:—

In the pyrexiæ which constitute the different morbid groups designated in Pinel's Nosographie by the name of essential fevers, we do not always find, after death, lesions in the digestive tube.

Whence it follows that several of these morbid groups may have an existence independent of that of a gastro-intestinal affection.

B.—*Frequency of the lesions of the digestive tube.*

If these lesions are not constant, are they at least so frequent, that, in consequence of this frequency, they acquire nearly as much importance as if they were never absent?

Since M. Broussais has called the attention of medical men to the state of the digestive tube in fever, innumerable facts have shown that, in almost all the cases where the body of a person who died during the course of what is called an essential fever was examined, the digestive tube was found to be diseased. Our own observation fully confirms these results, which may be expressed in the following terms:—

In the pyrexiæ which constitute the different morbid groups designated by the name of essential fever, lesions of the digestive tube are found very frequently after death, ninety-eight times out of one hundred.

Whence it follows that lesions of the digestive tube perform a very important part in those diseases, and that they should be taken into consideration, whether the question be to ascend to the nature of these fevers, or to determine the treatment to be employed. The frequency of intestinal lesions in fever has so convinced us of their importance, that, though we know them to be sometimes wanting, and also that, when they do exist, they cannot explain everything, still we thought it right to speak of fevers in the portion of our Clinique especially dedicated to diseases of the abdominal organs.

C.—*Seat and nature of the lesions of the digestive tube.*

The digestive tube, examined from the cardiac orifice of the stomach to the termination of the rectum, is not found altered with equal frequency in its different parts in persons who die during the course of continued fevers.

a.—*Stomach.*

In several subjects we have found this organ exempt from all appreciable lesion. It was very white through its entire extent; some few veins merely were marked beneath its mucous membrane. This membrane, as well as the other tunics, were everywhere of the natural consistence; neither were they thinner nor thicker than in their normal state.

In other subjects, and these were more numerous than the preceding, the inner surface of the stomach presented in some points red spots, resulting from the aggregation of a number of small vessels minutely injected. Sometimes the spots, when combined, occupied a space scarcely large enough to hold from a five to a forty sous piece; sometimes, and this latter case was more uncommon than the preceding, one-third, or even one-half, of the stomach presented this kind of injection.

At other times the inner surface of the stomach was found generally injected, this injection, however, being but slight.

This injection was observed more frequently towards the great cul-de-sac than in the other parts of the stomach.

In some cases we found the red tint replaced by a brown slate-colour or yellow tint. In a very inconsiderable number of cases we have detected the existence of ecchymoses of small extent in the submucous cellular tissue; these ecchymoses were found more particularly to occupy the splenic portion of the stomach.

Two or three times we found considerable increase in the consistence of the gastric mucous membrane; but we very frequently observed considerable softening of this membrane. This softening was not equally frequent over all parts of the stomach; whilst it was very rarely met in the pyloric portion, or on the anterior or posterior surfaces of the stomach, it was found to be a very common lesion in the great cul-de-sac. With respect to its colour, it presented three varieties, a white, a grey or brown, and a red.

In one case only this softening was not confined to the mucous membrane; all the coats had been affected with it; the slightest force was sufficient to tear them; in several points also the mucous, cellular, and muscular coat, had disappeared altogether; and the parietes of the stomach consisted on these points merely of the serous membrane, which was itself become very friable. This remarkable softening existed also without redness, or any other unusual colour.

On one occasion the mucous membrane of the stomach presented a great number of ulcerations, all similar in form and size; and another time we found the stomach completely perforated in its splenic portion.

The substances contained in the stomach rarely presented to us any peculiarities worth remarking. In general it contained nothing but the drinks swallowed by the patients, and some gases. We have never found any very great quantity of mucus in the stomach, and it was but in very few instances it contained any bile. In an individual who a few hours before death was seized with profuse black vomiting, the inner surface of the stomach was covered with a substance similar to that of the vomit; this appeared to be nothing but blood changed in its colour and in some of its properties by its stay in the stomach.

The natural size of the stomach we very rarely found changed. Two or three times only we found it so contracted towards the pyloric portion, that in this part it scarcely equalled the small intestine in size; in this case the mucous membrane was not more diseased than in other cases where no such contraction existed.

Such are the different states in which we found the stomach of persons who died during the progress of continued fevers. In all this there is nothing peculiar, nothing which is not found in the stomachs of persons who may have died of any other disease. In a great number of bodies we find these injections, these red and coloured appearances, these ecchymoses, and softenings, without there having been during life any symptoms resembling the symptoms of what are called essential fevers; these morbid changes do not belong more to acute than to chronic diseases; several too may be justly considered as a purely cadaveric result. With respect to the ulcerations which we once found in the stomach, and the perforation once observed by us in this organ, such morbid changes are also met in other diseases, nor can they explain the symptoms, except for the very cases in which they have been observed.

What we have just now said is confirmed by the result of M. Bouillaud's cases, as also those of M. Louis, who have found in the stomach alterations in no way differing from those which we have just described.

From these facts we feel warranted in laying down the following propositions:—1. The stomach is found healthy in a considerable number of persons who die during the progress of what is called essential fever, whatever may have been the symptomatic form of this fever.

2. The changes found in the stomach of persons who die during the progress of this fever have nothing peculiar, nothing which can constitute their anatomical character.

3. These changes differ not from those discovered in the bodies of persons who have died of any other disease, whether acute or chronic.

4. They are met with nearly equal frequency, both in those who have died during continued fever, and in those who have died of a different disease*.

5. Every fever called essential is not necessarily the product of gastritis.

6. The traces of gastritis found on opening bodies cannot always suffice to explain the different morbid groups called essential fevers.

7. Before placing the cause of these diseases in an inflammatory state of the stomach, it would be necessary to commence by deducting from that which may characterise this inflammatory state the different changes which may be owing to any other cause than a process of irritation, and several of which are not formed till after death†. It would be then found that the number of the cases wherein one may refer the fever to a gastric inflammation becomes less considerable than one would at first be inclined to think.

8. There are, however, cases where acute gastritis should be considered as the onset of typhoid fever.

b.—*Small intestine.*

The morbid changes of the small intestine, considered with respect to their seat, are found so much the more numerous according as this part of the digestive tube is closer to its union with the large intestine.

Thus we have very seldom found the duodenum affected. It was but in very rare cases also, that the rest of the large intestine in its upper four-fifths presented any lesion; on the contrary, it is in the lower fifth of this same intestine that we have found the most constant and marked lesions in persons who die during the course of a continued fever.

Let us now pass in review the different states in which this intestine is found.

1. The healthy state. This is the most uncommon occurrence; some of our cases show, however, that the small intestine may present no sort of morbid change after different kinds of fever.

2. A state healthy at the time of the post mortem examination, with traces of a disease which terminated recently.

In some of our patients who died of any affection during convalescence from a bad fever, we have found on the inner surface of the termination of the small intestine either the aggregated crypts, or Brunner's follicles, much more apparent than usual; each of their orifices was marked by a greyish point; in other respects they presented no morbid appearance. We thought it possible that this unusual development of the follicles depended on their having been affected some time before death, during the very course of the fever; we examined them at a time when they were returned to their normal state.

---

* The researches which have led us to establish this fourth proposition are entirely confirmatory of those of M. Louis.

† See, on this point of doctrine, our work on Pathological Anatomy.

In other patients, who also died during convalescence, it was no longer these follicular patches that we observed; but, in the place where they usually exist, a close examination showed us that the mucous membrane, far from being thickened, was, on the contrary, thinner than in the intermediate points; there were no longer villi to be observed there; there was only found there a thin, and, as it were, cellulo-vascular layer, which seemed to be mucous membrane reduced to its most simple state. It appeared to us that there was a newly-formed membrane there, which had just taken the place of cicatrised ulcers.

3. The erythematous state.

All the shades of vascular injection which have been found in the intestinal mucous membrane* were presented to us in the diseases now under consideration. It is principally towards the lower part of the small intestine that this injection is commonly observed. It sometimes exists as the sole lesion—a rather rare occurrence, but yet one of which we have met instances; sometimes it exists as a secondary lesion, around other morbid changes, of which we shall speak at another time.

There are cases where the surface itself of the mucous membrane is scarcely coloured, whilst the villi alone are very much injected. Dr. Scoutetten has lately directed our attention to this peculiar sort of injection, which we have seen more than once, and which he considers as much calculated to produce continued fevers, as lesion of the follicles.

4. The exanthematous state.

By this term we mean to designate that species of eruption which is found as a peculiar lesion on the inner surface of the termination of the small intestine, in persons who have died during the course of continued fevers, whether of a mild or severe form. Intestinal exantheme, very clearly pointed out by MM. Petit and Serres, described by us in the first edition of our Clinique, still better appreciated as to its nature by M. Bretonneau, traced out through all its varieties by M. Louis, constituted the first stage of the disease called dothinenterite by M. Bretonneau. It is unnecessary, at the present day, to attempt to prove that this exantheme is seated in the intestinal follicles. Should it attack those aggregations of cryptæ, known by the name of Peyer's patches, we find, in the lower fifth of the intestine, patches usually of an oval form, of variable size, and which form above the level of the mucous membrane a prominence of some lines; some are of a more or less bright red; others are grey, yellow, or blackish, and then resemble eschars; others are of a dull white. They are sometimes harder than the mucous membrane surrounding them; sometimes, on the contrary, they are very friable, and readily reduced to a pulp. There are cases where the form, &c., of the follicles may be readily recognised on their free surface; their orifices are found, and these small bodies, whose form has only become more distinct by their increase in size, are separated by perceptible intervals, which are more easily penetrated by the rays of light. There are other cases where these follicles are no longer distinct, and where the entire patch merely resembles a homogeneous mass, whose elementary structure has ceased to be appreciable; then these patches can no longer be regarded as belonging to enlarged follicles, except in consequence of their form and seat.

---

* See Pathological Anatomy.

It must not be supposed that these patches are formed solely by the enlargement of the follicles; very often beneath the latter we find the cellular layer itself very much thickened, and it then participates as much as the follicles in the production of the exantheme.

This exantheme may terminate in several ways. There are cases less numerous, however, than has been stated, where real gangrene seems to attack it; one or more patches then become detached like eschars, leaving an ulcer in their place. At other times, without there being any proof of the existence of previous gangrene, the exanthematous patch is destroyed in several points. Hence there are formed on its free surface several small ulcers, which enlarge and ultimately unite; and thus the complete disappearance of the exantheme is at length brought about. In other cases this exantheme has a different termination; it loses its redness, seems to become indurated, and now presents, on the internal surface of the intestine, merely patches of a duller white than the rest of the mucous membrane. These patches may continue for a longer or shorter time without producing any symptoms, or, at least, without being accompanied by those general phenomena which had at first coincided with their enlargement. This is the transition of the lesion from the acute to the chronic state. This exantheme may even terminate in simple resolution; then the patches forming it become gradually effaced, and in their stead we find only those oblong bands, with grey or black points, which we have already described in some of our particular cases.

There is another exantheme which is also observed on the inner surface of the small intestine, in the same cases as the preceding. Like this, it principally occupies the part of the intestine nearest to the cæcum; but, instead of appearing in the form of broad oval or oblong patches, it appears under that of papulæ separated from each other, red, grey, or whitish, of a conical form, most frequently presenting, on their summit, an orifice from which a mucous or purulent fluid is forced out by pressure. On examining a certain number of these papulæ, there are some found without any trace of orifice, whilst others, on the contrary, are found whose orifice, constantly enlarging, is changed into an ulcer, which, commencing at the summit of the papulæ, extends gradually to its base. Sometimes we find only some of these papulæ scattered in small numbers on the inner surface of the intestine; sometimes they are in immense quantities; and if they are at the same time depressed on their summit, as happens when they commence to ulcerate, there appears, on the inner surface of the intestine, an eruption which bears a very striking resemblance to small-pox.

Like the exantheme in patches, the pustular exantheme, which has been just described, has its seat evidently in the intestinal follicles. The difference in form between these two exanthemes depends solely on this circumstance, that the former consists of aggregated follicles, and the latter of separate follicles.

When we examine the small intestine of persons who have died a little time after having had a bad fever, it sometimes happens that, with or without the grey or black-pointed patches of which we have spoken, we also find traces of inflammation of the separate follicles (called *Brunner's Follicles*). There is then perceived, on the inner surface of the intestine, a greater or less number of small white or grey bodies, of considerable consistence, in the centre of which there is found a blackish blue point. Who could avoid recognising in these bodies follicles a little more developed than usual?

It has been stated that both varieties of the intestinal exantheme which have been just described observed fixed periods in their development, similar to those observed by the eruption of small-pox; so that, knowing the stage of the disease at which death supervened, one might tell, before opening the body, in what stage the exantheme might be found; whether, for instance, it was still intact, or already ulcerated, &c. Our observation has not led us to the same result. We have found the follicles ulcerated in persons who died a few days after the commencement of the disease; and, on the contrary, it has happened us more than once to meet only simple exantheme, without any appearance of ulceration, in persons who had not died till the disease had existed for a very long time.

Neither do we consider it correct to say that the exantheme in patches or in pustules has a necessary tendency to ulceration, and consequently that a person cannot recover till after the patches or papulæ have been changed into ulcerations, and the latter then cicatrised. The eschar, whose fall, it has been said, occasions the ulceration, is but one of the possible, and by no means a necessary, termination of the exantheme; and a person may very well recover from a continued fever after having had only an exanthematous inflammation of the follicles, without eschar, suppuration, or previous ulceration. This has been confirmed by M. Bretonneau.

The state of the mucous membrane between the patches and the papulæ should also engage our attention. It presents itself under two different aspects; sometimes it is white in every point, and presents no trace of disease whatever; the disease is then confined solely to the follicles; sometimes, on the contrary, this membrane is also diseased in the intervals between the follicles; it is either simply injected in different degrees, or changed in different degrees with respect to its consistence.

Once it was ascertained that no lesion is more frequent in continued fevers than intestinal exantheme or dothinenterite, as it is called by M. Bretonneau: a very important point remained to be established. It then became necessary to determine whether, in the individuals who died during the progress of other diseases than fevers, this exantheme were also found; for, if it so happened that it had been met in every affection as frequently as a hyperemia or a softening of the stomach, it is evident that this exantheme would have lost its value as an anatomical character of what are called essential fevers.

But such is not the case. In vain have we very frequently sought for this exantheme in the intestine of individuals who died of other acute diseases than fevers. We did not meet it; we merely found in different subjects a very unequal development of the follicles, but nothing which resembled the exantheme of fever.

If we examine the intestine in cases of chronic disease, we shall find one, namely, pulmonary phthisis, where the ileum presents a morbid change, which approximates, more than any other, to the exantheme of fevers. This change is also seated in the aggregated follicles, which become very prominent, are of an oval form, and on the surface of the intestine. On making an incision over these follicles, a tuberculous matter is expressed from them which fills the follicles, and to which their tumefaction is principally owing. In this case the chronic progress of the affection is sufficient to occasion a prodigious difference in the symptoms; but still this case proves that the aggregated follicles of Peyer may be affected and changed into exanthematous patches in other diseases as well as in continued fevers.

M. Louis, to whose testimony we frequently appeal, has also sought for the intestinal exantheme in many other acute diseases besides fever, and has never met it, more than ourselves, except in one case of scarlatina, in which he found those of the elliptical patches very red and a little thickened. In this case the existence of scarlatina was not well ascertained, and the person died on the second day of his admission into the hospital, before the particulars of the disease could be well collected. In three other cases of scarlatina, and in two other cases which he does not specify, M. Louis found a very considerable development of Brunner's follicles. We have discovered the development of these separate follicles more frequently than M. Louis in persons who died of other acute diseases besides fever; so that we are inclined to think that their development belongs less exclusively to these affections than that of the aggregated follicles *.

5. Ulcerations.

It is in the part of the small intestine, where the exantheme is developed, that the ulcerations are almost exclusively detected. In many cases it is easy to see that they arise from the destruction either of the elliptical patches or of Brunner's follicles. They are seen to commence on the very surface of these patches, or at the summit of these follicles; and, even in one and the same intestine, one may trace all their progress, even to the complete disappearance of the follicles. There are some subjects in whom we find, in a small portion of the intestine, beside each other, first, some patches intact; secondly, isolated follicles, also intact; thirdly, patches and follicles beginning to become ulcerated; fourthly, simple ulcerations. At other times it is only by analogy it can be admitted that these ulcerations succeeded a destruction of the follicles. Nothing proves that there was previous engorgement of these bodies. In this case, however, the ulcerations occupy the same part of the intestine as in the preceding case; they are of the same form, and have the same aspect. They are almost always found, like the elliptical patches, towards the part of the intestine opposite to that which gives attachment to the mesentery. Some of them are regularly rounded, others are altogether like Peyer's patches; several of them, when enlarging, frequently unite into a single one, which then occupies a considerable extent. It is not uncommon to see the upper surface of the ileo-cæcal valve changed into one large ulceration; neither is it uncommon to find the mucous membrane of the small intestine completely destroyed to the extent of six or eight inches above the valve. At other times, on the contrary, nothing is found but very small ulcerations, scarcely as large as a five-sous piece, or even much smaller.

The bottom and edges of these ulcerations, and the portions of mucous membrane situate between them, present several aspects, which it is important to distinguish.

Their bottom may be formed either by the sub-mucous cellular tissue, or by the muscular tunic, or merely by the peritoneum. When it is the cellular tissue, sometimes it is thin and pale, and differs in no respect from what it is in its normal state. Sometimes it is very perceptibly thickened, as it were wrinkled, and usually coloured either red, greyish, yellow, or black. To some points of its free surface there are still attached some debris of the mucous membrane, ready to separate like eschars.

When it is the muscular layer that forms the bottom of these ulcerations, it is occasionally found, like the cellular layer, either in its natural state, or changed in its consistence and colour.

When there is nothing at the bottom of these ulcerations but the peritoneal tunic, this membrane may be so fragile that the slightest force is sufficient to tear it; so that, if the individual had lived for some time longer, a cause entirely mechanical—as, for instance, the distension of a part of the intestine by gases—would have been sufficient to produce intestinal perforation.

The edges of the ulcerations are formed by the mucous membrane, which is sometimes red and thickened, and sometimes white and thin.

With respect to the portions of mucous membrane situate between the ulcerations, they are often injected, softened, or exanthematous; but frequently they present no kind of appreciable alteration; they may even be perfectly white.

We have more particularly met these ulcerations with whiteness, and other normal qualities of the tissues, which form their bottom and edges, in cases where,

---

* One of the most constant lesions which we met in the epidemic cholera was tumefaction of the intestinal follicles, both the separated and the aggregated. But the patches and papulæ in this case project but slightly above the level of the mucous membrane, and their colour is generally white.

at the time of death, the individuals were bordering on convalescence, or might even be already considered as convalescent. We are inclined to think that the ulcerations found in this state are in progress of cure.

But there are other cases where this cure is still more advanced, and where the particular state in which some points of the intestine are found, can be considered as nothing else than a real process of cicatrisation more or less advanced. Case 27th presented us with an instance of this cicatrisation. It might be so much the more readily admitted in this case, as the individual whose intestine we found in this particular state, which we considered as the sign of a cicatrised ulceration, had died during convalescence from a typhus fever.

The cicatrisation of ulcerations, supervening under the same circumstances, have been also noticed by MM. Bouillaud and Louis. In a patient who died of gangrenous erysipelas of a limb, forty-three days after the invasion of the fever, the symptoms of which were amended at the time of death, M. Louis found near the cæcum *several ulcerations, the circumference of which was depressed, and whose centre was lined by an extremely thin pellicle, as it were a serous membrane, continuous with the sub-mucous tissue of the circumference.* In another individual, who also died when all the signs of convalescence had made their appearance, the same observer detected one of Peyer's patches, which, in a part of its extent, was smooth, polished, depressed, and divested of mucous membrane. "The latter," says M. Louis, whose own very words we cite, "terminated near the circumference of the patch, and adhered at this point to an extremely thin pellicle, resembling a serous membrane in appearance, which covered the muscular tunic, and was continuous with the sub-mucous tissue."

In the two cases cited by M. Louis a new mucous membrane was not formed; on the contrary, in the cases given by us there appeared to have been a reproduction of the mucous membrane itself, but a mucous membrane possessing neither villi nor follicles.

In our cases there will be found some instances where, though the individuals died, as the preceding did, during their convalescence, the ulcerations, still very well marked, presented no tendency to cicatrisation. Similar facts have been noticed by M. Louis; they lead us to this conclusion, that the general symptoms which constitute fever are not so connected with the intestinal lesion, that they may disappear, though the latter still exists; but, from these facts, we should not draw the inference that the intestinal lesion did not produce the fever; for the mere transition of this lesion to a less acute state might suffice to explain the cessation of the sympathies, and consequently of the fever. Besides, is not this the case with all the lesions of our different organs? May they not all exist in a completely latent state, either in a continued form, or only at intervals? And observe well, that in all it is not only the general symptoms which may be wanting; there may also be a complete absence of the local symptoms. Recollect those numerous cases of latent pneumonia which we have so frequently met, and which were not announced either by cough, dyspnœa, or the expectoration.

6. Perforations*.

These must be considered as one of the terminations of those different lesions now passed in review. They are the immediate cause of death in a certain number of persons labouring under continued fever. Their most frequent seat is either the exanthematous patches above described, or the ulcerations which have, or have not, succeeded to these patches.

The probability of perforations is not always in a direct ratio of the number, extent, or severity of the ulcerations, or other intestinal lesions. Our tenth case presented us with an instance of intestinal perforation coming on in an individual in whose intestine we only found an ulceration of very small diameter, with some very small patches around it.

---

* For a description of these perforations, see our *Pathological Anatomy*.

Intestinal perforations come on only at an advanced period of the disease, when the symptoms of what is called adynamic fever are already present. The result is peritonitis, which, in many cases, developes itself by its usual signs, but which, in some cases, however, is not indicated by any pain—a circumstance which is owing, no doubt, to the diminished state of the sensibility. If the abdomen was previously tympanitic, the peritonitis does not cause it to change its form ; the small quantity of liquid produced is not then easily detected ; in a word, the different local signs of peritonitis may be but very imperfectly marked ; and there are cases where the sudden increase of the prostration, and the rapid alteration of the features, have been the only additional symptoms which coincided with the invasion of these attacks of peritonitis produced by perforation.

Speedy death commonly follows peritonitis, which comes on, in the progress of fever, in consequence of intestinal perforation. The patients may die from twelve to twenty hours after the appearance of the first signs which excite any suspicion of this affection ; however, it may happen that death does not occur till a considerably later period. We have seen a person who had arrived at one of the last stages of adynamic fever, when all at once vomiting came on, and at the same time the abdomen became tense and painful on pressure. We supposed that one of the ulcerations, which probably existed in the intestine, had terminated by perforation. However, on the following day the vomiting and nausea ceased ; the abdomen, when pressed, evinced no pain. We thought we were deceived. The patient lived three or four days more without the peritonitis giving any new indication of its existence. The post-mortem examination, however, proved that it had occurred, and that it had been occasioned by intestinal perforation *. M. Louis has mentioned a case wherein death did not come on till seven days after the development of the first symptoms of peritonitis. These symptoms, however, had set in in a very severe form. They became somewhat abated towards the fourth day.

Intestinal perforations may also supervene in persons who as yet present only symptoms of a very slight fever, and a disease not as yet marked by any character of severity may thus be suddenly changed into a disease rapidly fatal.

---

* The perforations which occur in other diseases besides fever, though ordinarily followed by peritonitis, which proves rapidly fatal, may sometimes occasion only chronic peritonitis. The following case appears very remarkable in this respect :—A young man, labouring under pulmonary phthisis, had, for a considerable time, profuse diarrhœa. The abdomen had been always entirely free from pain. One day he complained of acute pain around the umbilicus, which was increased by pressure. This pain was considered as the result of inflammation in the digestive tube. It remained constant, though not very severe, for eight or ten days. None of the other symptoms were much aggravated. The patient suddenly perceived his abdomen moistened in a great quantity of liquid, and discovered a linear fissure at the umbilicus. In the course of the day an ascaris lumbricoides escaped with a yellow fluid similar to that usually filling the small intestines. Was it not reasonable to suppose that a portion of intestine had been perforated ; that, by means of partial adhesions, contracted between it and the abdominal parietes, no effusion could take place into the peritoneum, and that the abdominal parietes were in their turn inflamed and perforated? Was it not, in a word, a præternatural anus which was now established? Still, on the following days, a little fluid continued to escape through the fistula. The abdominal pains were not severe. The patient, having now arrived at the last stage of pulmonary consumption, died twenty-seven days after the appearance of the first pains, and about eighteen days after the formation of the fistula. Traces of a frightful peritonitis were found. The intestines were united into one single mass by black and very thick false membranes. Some greenish fluid was effused between the convolutions of the intestines, and retained there by membranous bands, which formed, as it were, the parietes of a number of partial cells. No adhesion existed at the umbilical region. Two ascarides lumbricoides were found in the peritoneum. Their presence could not suffer us to doubt the existence of a perforation of the intestine ; but the adhesions were so numerous and so close, that it was impossible to find it.

By recapitulating all that has been just said regarding the state of the small intestine in persons who die during the progress of a continued fever, we shall lay down the following propositions:—

1. Among persons who die with one or other of the morbid groups called essential fevers, some present no appreciable lesion in the small intestine.

2. In others, we find in the small intestine lesions similar to those found in most other diseases (injection, softening of the mucous membrane in different stages, etc.)

3. In the greater number, the small intestine presents a peculiar lesion, which, in its acute form, is almost exclusively confined to what are called essential fevers, and which consists in inflammatory tumefaction of the intestinal follicles. From this tumefaction arises an exantheme which occupies the termination of the ileum.

4. This exantheme may terminate in mere resolution or in ulceration.

5. Observation does not prove that every exantheme which ulcerates commenced by becoming changed into an eschar.

6. Ulcerations, when once formed, do not necessarily prevent recovery, for we have several times ascertained their cicatrisation.

7. The exantheme does not seem to run through as fixed stages, as has been stated, in its development, as in its terminations. When once produced, it does not necessarily terminate either in gangrene or ulceration; and when the latter does take place, it is not always after the same lapse of time.

c.—*Large Intestine.*

Its lesions are far from being uniform. In a considerable number of our cases we found it perfectly healthy through its entire extent.

Of the different parts of the large intestine the cæcum is that most usually the the seat of lesion.

The morbid changes found in the large intestine are:—

1. Simple erythema, which is very rarely general, but is frequently limited to the cæcum.

2. Unusual enlargement of the follicles. The result of this is an exantheme, which, in the cæcum, may present itself under the form of patches similar to those of the small intestine, but which, over the remainder of the large intestine, is never seen except under the appearance of pustules or isolated pimples (boutons).

3. Ulcerations. These go on diminishing in frequency from the cæcum towards the rectum. Those observed in the cæcum have the same appearance as those at the termination of the small intestine. In the colon they are generally smaller, and separated by greater intervals. We have met a case in which, of the different parts of the large intestine, the rectum alone contained ulcerations; they were all of the same form and same size; one would have readily taken them for the enlarged orifices of follicles.

Thus the lesions found in the large intestine are of the same nature as those found in the small intestine; as the latter, they may be divided into lesions similar to those met in all diseases indifferently, and into special lesions.

The large intestine may, like the small intestine, but more frequently than it, be found totally exempt from any change.

d.—*Substances contained in the digestive tube.*

Worms.—These we have met in only a very small number of cases; they were very numerous in one of these cases, and very few in the others. They were ascarides lumbricoides, and tricocephali. The first were lodged in the small intestine, and the second in the cæcum. It seemed to us that in the different cases where we met them, they were merely an accidental complication of the disease. They coincided with most of the symptoms characterizing *mucous fever* in the subject of our fourth case. It may be well to mention here, that in most of those who died of the epidemic mucous fever of Gottingen, Ræderer and Wagler found a great number of worms in the intestines. Why were these animals produced in such quantity in this epidemic? Why in the post-mortem examinations in Paris for several years back have so few worms been found*?

Liquid substances.—We have nothing particular to observe with respect to the mucus found in the intestines of persons who die during the course of continued fever. In its place there is often found a liquid matter, resembling water coloured yellow, which fills a part of the digestive tube. There are some cases in which the intestine contains a great quantity of yellow, greenish, or reddish bile, which tinges its inner surface. We very rarely found this bile in the stomach; and, in general, what we have observed in this respect does not induce us to admit that the accumulation of bile in the digestive passages acts a considerable part in the production of fevers, and consequently should not afford any indication for the treatment. We have not found more bile than usual in the digestive tube of a person who died whilst he as yet presented only the symptoms of a bilious fever (Case 1.)

We sometimes find blood exhaled on the surface of the stomach or of the intestines. This blood is sometimes liquid, sometimes coagulated. There are some cases where there is but a small quantity of it deposited in some points o the digestive tube; in other cases this tube is filled with it, and death has then been the result of gastric or intestinal hemorrhage. This hemorrhage is not connected with any particular lesion of the mucous membrane, which, beneath the blood, presents only redness, ecchymoses, different degrees of softening, and which, in the intestine, presents only those same alterations, or else traces either of exanthemes or of ulcerations; we do not find the cause of the hemorrhage in the solution of continuity of any large vessel.

Modified by its tarrying in the stomach, the blood, which is accumulated in it, assumes occasionally such an appearance, that it becomes entirely similar to the black fluid which constitutes the matter of vomiting in the yellow fever. We have cited a case of this kind; M. Bouillaud has detailed another in which there was at the same time a yellow tinge of the skin, and the patient had passed blood both by vomiting and purging. There was found in the stomach a brown liquid resembling a concentrated decoction of coffee. The gastric mucous membrane presented towards the great cul-de-sac patches of a vinous red colour, similar to ecchymoses. In the duodenum there was nothing but bile; but in the remainder of the small intestine some blood was collected, which was coagulated in some points and liquid in others. Several abscesses were found in the liver.

Gas.—The colon is the part of the digestive tube wherein a great quantity of gas is most frequently found in persons who have died of a bad fever. In many individuals the colon is so very much distended with gases, that it is distinctly marked through the abdominal parietes, presses the diaphragm upwards, and conceals in a great measure the remainder of the digestive tube, and the other abdominal viscera. It occupies the epigastrium in particular, where, during life, it might be taken for the stomach.

The cause, under whose influence this great disengagement of gas takes place in the colon, is still unknown. We cannot attribute it to inflammation, nor ulceration of the colon, for this meteorism exists as often in cases where, after death, the colon is found free from all appreciable lesion, as in those where it is found diseased. Besides, as has been remarked by M. Louis, the small intestine is much more frequently inflamed or ulcerated than the colon, and yet there is not produced in the ileum the same quantity of gas as in the large intestine. All we can say is, that this great disengagement of gas belongs almost exclusively to the class of diseases now under consideration.

---

* In several other epidemics of typhoid fevers, entirely resembling dothinenterite in their symptoms, which have afflicted Europe during the sixteenth, seventeenth, and eighteenth centuries, the very great quantity of worms passed by the patients was noticed as a very prevailing phenomenon of these epidemics.

d.—*Relation which the Gastro-intestinal Lesions bear to the Symptoms.*

After having passed in review the different morbid changes found in the digestive tube of persons who have died during the progress of continued fever, we must now inquire what relation may be established: 1st, between the period at which these changes come on, and the different phases of the diseases; 2ndly, between the intensity of these same changes, and the severity of the symptoms. The solution of these two questions once given, we shall be better able to appreciate the influence exercised by the gastro-intestinal affection on the production of the symptoms.

The second case afforded us an instance of an individual who died in only six days after the invasion of the disease. In this case the alteration of the follicles was very well marked. It was equally so in another (CASE 1), who died on the ninth day. M. Trousseau mentions a post-mortem examination by Bretonneau, on the fifth day of the fever. In this case, as in the two preceding, the follicles were found diseased.

The glands of Peyer were very much tumefied, and they formed patches which were raised above the mucous membrane. MM. Petit and Serres have mentioned the case of a man who died of pneumonia a very few days after the signs of the disease, which they called entero-mesenteric fever, began to manifest themselves (from the fourth to the sixth day); the patches of the ileum were very numerous. They were also met by M. Louis on the eighth day of the disease.

Thus when the continued fever is connected with the intestinal exantheme, the latter commences from the very first appearance of the disease. It also accompanies it in its entire course, and it is found in fevers which have lasted only a very few days, as well as in fevers which have not been followed by death till after forty or fifty days' duration of the affection. This second statement is sufficiently demonstrated by our particular cases, as also by those of MM. Petit and Serres, Bretonneau, and Louis.

When the group of symptoms which constituted the fever has disappeared, and when at a period more or less remote from the commencement of convalescence some other affection carries off the patient, traces of cure of the exantheme are found in the intestines; these traces are either depressed patches, or cicatrised ulcerations. Sometimes even the dothinenterite still exists, though the fever may have decreased for some days back; we then find either patches whose resolution is scarcely commencing, or ulcerations not yet cicatrised. Thus, when a lung has been attacked with inflammation, it often happens that it still remains hepatized after the characteristic symptoms of the disease have disappeared.

Thus inflammation of the follicles arises with the fever, or at least a little time after it, and it continues as long as the fever itself continues. To be sure, the intensity of the lesions which characterize follicular enteritis is not always proportioned to the severity of the symptoms observed during life. But is not this the case with most diseases where, in different subjects, symptoms varying both in their nature and severity appear in consequence of one and the same lesion?

Follicular enteritis then appears to us to be the commencement of a very great number of what are called essential fevers, and particularly of that which MM. Chomel and Louis have designated *typhoid fever*.

This latter fever itself may, however, present itself in cases where the intestinal follicles are not diseased, and, in a word, there is scarcely any disease, having its primary seat either in the solids or in the blood, in consequence of which we may not see *typhoid fever* sometimes developed, and much more frequently *simple typhoid phenomena*, or under other forms the different symptoms to which Pinel gave the name of *ataxic* and *adynamic*. Our particular cases present numerous instances of this; and the reflections accompanying them sufficiently develop this point of doctrine.

SEC. II.—*Functional Lesions of the digestive Apparatus, observed during life.*

This apparatus presents, during the progress of fever, disturbances of functions which tend to show, at least as much as the lesions detected there after death, the important part it performs in the production of these diseases.

Let us examine those functional disturbances, referring them to the different parts of the canal, where we may presume that each of them has its seat.

In almost all the cases of slight or severe fevers reported in this work, we found the mucous membrane of the mouth, excepting that of the tongue, of which we shall speak presently, changed both with respect to the quantity of blood which should circulate through it, as also with respect to the secretion which in the natural state should take place on its surface.

The mucous membrane of the mouth, in these diseases, is usually of a deeper red than in other affections where the febrile disturbance is still as great; as, for instance, in acute pneumonia or acute articular rheumatism. At the same time its secretion is either suppressed, or increased in quantity, or changed in character. In the first case, this membrane presents unusual dryness; in the second case, the mouth is filled with a viscid, gluey mucus; in the third case, instead of mucus, there is sometimes observed on the surface of the lips, gums, and cheeks, a creamy or cheesy substance which covers these parts, either under the form of isolated points, or in the form of patches of greater or smaller size. At other times the mucous membrane exhales a certain quantity of blood, which coagulates on its surface, and produces yellow or black crusts more or less thick.

What do these different modifications of the buccal secretion indicate? And first, are they connected with certain determinate and always identical states of the sub-diaphragmatic portion of the digestive canal? By no means. All these varieties of the buccal secretion are found without there being any difference in the morbid changes of the stomach or intestines. Still more; there is not one of these varieties connected with certain degrees of intensity of the gastro-intestinal lesion. The latter may be very slight, or very severe, with all the possible shades of secretion of the mucous membrane of the mouth. These shades depend, then, on the gastro-intestinal affection with which they coincide, and which is, as some will have it, their occasional cause, but on peculiar dispositions of the individuals, dispositions which are always connected with the states in which their innervation and hematosis may be placed, whether temporarily or permanently.

Thus, then, the modifications which the mucous membrane of the mouth presents in persons labouring under continued fever, do not indicate the nature or severity of the lesion of the digestive passages; they are but the expression of a general state by which the prognosis of the disease and its treatment should be regulated.

Of all diseases, fevers are certainly those where the tongue presents the most varied as well as the most important modifications. These modifications are so generally known, and we have dwelt so much on them in our particular cases, that we shall not now lose much time in describing them. We shall now speak of them principally in order to convert them into signs.

Is the state of the tongue, in fevers, a faithful index of the state of the stomach? From the facts contained in our particular cases, we feel warranted in deducing the following conclusions:

1. No constant relation can be established between the state of the tongue and that of the stomach.

2. Each of the modifications which the tongue may present, in its colour and in its coatings, does not correspond with any specific modification of the stomach.

3. The stomach may present after death a similar state, however dissimilar may have been the state of the tongue during life.

4. A morbid state of the stomach may coincide with a natural state of the tongue, and a morbid state of the tongue may coincide with a natural state of the stomach.

5. The dryness and black colour of the tongue does not indicate a more severe affection of the stomach than is indicated by any other modification of the tongue.

These results have been still further confirmed by the observations of M. Louis. We may also remark with this physician, that in a great number of other cases besides continued fevers, where the tongue scarcely deviates from its natural state, the stomach is not found in a state different from that in which it is found where the tongue is red, dry, covered with black crusts, &c.

Can we establish a closer connexion between the state of the tongue and the state of the small intestine?

With the exception of some individuals whose tongue continued natural, we found it changed in all those whose small intestine was exanthematous. But whether the patches were still intact, or already in a state of ulceration, there was no state of the tongue which corresponded exactly with either of these stages of the exantheme. And further, the varieties in the extent of this exantheme were not indicated by different states of the tongue; neither could it serve to shew whether, between the patches or between the ulcerations, the mucous membrane was healthy or diseased. Thus, of two individuals who were both found to have dothinenterite similar in every respect, the one had his tongue covered with a yellowish coat, whilst the tongue of the other was dark-coloured.

Among the individuals who, after having had all the symptoms of severe fever, yet presented no trace of exantheme, but simple erytheme of the intestinal mucous membrane, some retained a natural state of the tongue, whilst others had it dry and black; and yet these different states of the tongue existed with one and the same state of the small intestine.

Again, in those in whom the symptoms of bad fever could not be accounted for by any lesion of the digestive passages, we found the tongue dry and black, with all the small intestine perfectly healthy.

There is not, therefore, any more necessary connexion between the state of the small intestine and of the tongue, than between that of the tongue and the stomach.

With respect to the large intestine, we have often found it perfectly healthy with all possible states of the tongue.

It seems to us, therefore, sufficiently demonstrated, that of the numerous modifications which the tongue may undergo, there is not one which should be considered as the necessary product of a morbid state of the stomach or intestines. The tongue may remain healthy, the digestive tube being diseased; it may present a diseased appearance, though the digestive tube may have continued healthy; but there is very often a coincidence between the affection of the tongue and of the sub-diaphragmatic portion of the digestive passages, which may be accounted for by the similarity of the organization and functions of these different parts. The same cause, which, from the commencement of a continued fever, or in its progress, renders the gastro-intestinal mucous membrane diseased, also attacks the mucous membrane of the tongue and mouth, as it almost always attacks the mucous membrane of the air passages at the same time; but it may happen, as is proved by observation, that this cause produces the disease in only one of these parts, leaving the others intact. Only taking into account how very rarely these affections exist separately, and considering their frequent coincidence, we must admit, that every time there is any modification in the state of the tongue, there are strong grounds for thinking that there must be at the same time disease of the gastro-intestinal mucous membrane ; it is from the other symptoms we are to learn whether this coincidence, which is only possible, but not necessary, does really occur in such or such a particular case.

With respect to the varieties of changes which the tongue undergoes, with what are we to connect them? We now know it is not with different morbid states of the gastro-intestinal mucous membrane, such at least as those presented to us in post-mortem examinations. Here all our theories have proved insufficient to explain these every-day facts. But observation has taught us, that among these numerous modifications of the tongue, there are several which, connected or not with an affection of the stomach or of the intestines, indicate certain specific states of the system which can only be combated with advantage by opposing to them a treatment as specific as themselves[*]. Thus, a red tongue, whether this redness appears in separate and isolated points, or on the edges, at its apex, or at its centre, uniformly contra-indicates the employment of any other means than that of antiphlogistics ; and a broad tongue, covered with a white or yellowish coat, and without any trace of redness, whether pointed, or of any other kind, often contra-indicates blood letting: it may indicate, on the contrary, the employment of emetics or purgatives ; and that, not because there is then in the stomach matters to be evacuated, but because experience has shown us that, after the changes produced in the system by strong emetics or purgatives, there is the greatest possible chance for our seeing that peculiar morbid state to disappear, which had been indicated by the appearance of the tongue ; but it should be well observed, that in the same manner as redness of the tongue is not necessarily connected with gastric irritation, so whiteness of the tongue does not always exclude the existence of this irritation: it is for the other symptoms to disclose this ; we may then estimate their importance, and calculate how far the existence of this irritation may modify the treatment. Whilst we no longer consider dryness and blackness of the tongue as necessarily connected with gastro-intestinal inflammation, we shall find in this appearance of the tongue the index of a third state of the system, in which, whether there may be or may not be gastro-enterite, debilitating means of every kind become injurious ; by which we do not mean to say that we must necessarily have recourse to a stimulant plan of treatment ; to refrain from bleeding does not imply that we are to give quinquina. To leave to nature, by an expectant mode of treatment, sufficient strength, so that she may be able to proceed to a resolution of the disease, is not the same thing as occasioning by medicine a reaction entirely artificial, which may be occasionally useful, but is also frequently unattended with benefit, or proves even injurious.

Dryness and blackness of the tongue do not ordinarily happen till rather an advanced stage of the disease. This state of the tongue may be preceded by a red and polished appearance ; oftentimes the tongue then seems to be glued to the finger which touches it. The epithelium becomes still drier ; it then becomes chopped ; blood escapes from these chops ; it accumulates on the surface of the tongue, where it forms brown or black crusts.

At other times, a viscid mucus of a dirty grey colour causes the tongue to adhere to the velum palati and to the teeth. This mucus is imperceptibly changed into a blackish coat.

In other persons, the white yellow coat which covered the tongue is observed gradually to become brown.

In other cases, this coat, which is at first very thick, diminishes ; it disappears from the centre of the tongue, which at this point becomes dry, and presents a red tint, which passes imperceptibly to brown and black.

---

[*] We should never forget that, at the moment a disease attacks a patient, a certain modification occurs in the organization, the nature of which depends on the different physiological states in which the disease finds the subject, the result of which may be a difference in the nature of this disease itself, the appreciable lesions of the organs remaining the same.

Beneath the black crusts, or between them, the tongue is sometimes remarkably pale.

At the same time that it is dry it may be very pale, or of a clear yellow tint, which somewhat resembles the colour of burnt cream.

Though, as we have just now remarked, the dry and fuliginous state of the tongue does not in general present itself till after the disease has existed for some time, there are some cases where this state of the tongue shows itself from the very first days, or even from the very first moment. Sometimes the premature appearance of this state coincides with other bad symptoms, which may continue or disappear before it. Sometimes no other alarming phenomenon is observed than the dryness and brown colour of the tongue. There are some persons who are very particularly disposed in this respect ; they cannot have even a slight attack of illness, without their tongue becoming instantly dry and brown*. In some, this state of the tongue continues during the entire course of the disease ; in other persons it only marks its commencement. We have mentioned some cases of this kind. Thus the prognostics drawn from the tongue have their exceptions as well as others.

Let us now follow up the examination of the other functional disturbances of the digestive tube.

The loss of appetite has constituted, in several patients, the precursor of the affection. A certain time before taking to the bed—sometimes for some days only, sometimes for a month or six weeks—they no longer felt the sensation of hunger as usual, and this sensation by little and little became altogether lost. This was occasionally the only derangement which they suffered in their health ; but most frequently to the diminution of appetite there was added general illness, a distressing headach, pains in the kidneys and in the limbs.

In several other patients, the appetite remained intact up to the day when they were suddenly seized with fever, and took to the bed. In some even it was almost immediately after a meal which they had eaten with as much appetite as usual that the fever manifested itself.

Anorexia then is a frequent, but not uniform, precursor of continued fever.

During the entire course of the disease, no appetite whatever was felt ; some patients asked for food, conceiving the debility which they experienced to be hunger.

At a subsequent period, when every thing indicates the commencement of convalescence, there are some patients in whom the appetite is suddenly re-established, and a considerable number of persons may pass at once from a strict to a very substantial diet ; we do not think that such would have been the case, if there were in such persons any serious lesion of the gastric mucous membrane. Others, though feeling considerable appetite, cannot satisfy it without risk ; when a small portion of food is given to them, the pulse becomes accelerated, the skin hot, or diarrhœa returns. And yet there is no bad taste in the mouth, the tongue is natural, there is no thirst, and the epigastrium is free from pain. We are inclined to think, that in such a case it is not the stomach which suffers from the food, but the intestines, whose mucous membrane, as yet scarcely healed, is irritated by the contact of any foreign substance. For want of paying sufficient attention in such cases to the effects of taking food, persons have been attacked with a diarrhœa which nothing could check, and which carried them to the grave, either in an acute form, or after having made them pass slowly through all the stages of marasmus.

---

* We have remarked that the tongue became dry and brown in old persons more readily than at the other periods of life.

With such convalescents it is important, therefore, for some time to restrict their diet to food, the materials of which, being almost entirely absorbed in the stomach itself, or in the upper part of the small intestine, afford the least possible residue. In such cases, we have seen milk replaced with great benefit by beef soup suitably prepared.

In other convalescents, all their functions are restored to the normal state; the diarrhœa has disappeared for a considerable time, and yet the mouth continues foul and clammy, the tongue is loaded, and the appetite is not restored. Under such circumstances, a continuation of strict regimen is all that is to be prescribed. But it must be recollected that there are individuals of such a constitution that they are not able to support abstinence from all food for a long time; such treatment in them gives rise to various nervous symptoms, an alarming acceleration of the circulation, then secondary hyperemias, the real cause of which is often overlooked. In such cases we should carefully examine the state of the primæ viæ, and if there appears no contra-indication, we should give some bitters. There is not a doubt but the adoption of this treatment has often produced a most favourable change in the state of the stomach, so that the result of it was the return of appetite; and, at the same time, all the symptoms disappeared which had been produced and kept up by the continued strict regimen. Are these cases where advantage might be derived from the use of emeto-cathartics, which ancient humourists thought themselves in a manner bound to employ during convalescence in almost every acute disease? Was it mere theory which suggested this practice to them? Was it the observation of some cases, wherein, when judiciously applied, it had succeeded? With respect to this matter, it should be recollected, that the subjects of several of our cases were persons having no longer any fever, and presenting no other ailments except want of appetite, and some other symptoms referrible to gastric disturbance, when these symptoms began to disappear immediately after they had taken an emetic. Satisfied as we are that a question of therapeutics especially cannot be solved except by a much greater number of facts than those we have given on this particular point, we shall merely state what we have observed, and, without wishing to draw from it any definite consequence, we still think such facts merit attention.

The sensation of thirst has been very variable in our patients. With the same group of symptoms, some experienced intense thirst, whilst others felt no desire for drink. One of those, in whom the thirst was extreme, had his stomach perfectly healthy. Thirst, therefore, is not always the sign of gastric irritation: it may also be attributed either to a derangement of all the functions of nutrition, or to a sudden and great loss of the serum of the blood, or to mere disturbance of the nervous system.

A small number of patients experienced nausea, and a still smaller number had vomiting. We have more than once seen this symptom make its appearance only at the commencement of the disease, and then cease. The matters vomited consisted either of the drinks taken into the stomach, or of a small quantity of clear, transparent mucus, or of yellow or greenish bile, or of blood. This last species was the most uncommon; the blood vomited was black, like a solution of chocolate or coffee grounds.

No connexion could be established between the existence of nausea or vomiting and any determinate state of the stomach appreciable on the dead body. On the one hand, we have not observed these two phenomena in several persons whose stomach was found intensely red and very seriously altered; on the other hand, they have been observed in persons whose stomach, when examined after death, was found in an almost healthy state. This important fact has been also confirmed by M. Louis. Out of twenty persons labouring under the affection which he has called typhoid fever, and who had had either nausea or vomiting, only eleven presented a more or less serious alteration of the gastric mucous membrane.

Thus the existence of nausea or vomiting in continued fevers does not prove that there is, in the individuals so affected, a greater irritation of the stomach than in those in whom they are absent. We cannot even infer from them the simple fact of the existence of this irritation.

What, then, is indicated by these phenomena with respect to the nature of the disease? and what with respect to treatment?

What appears to us clearly demonstrated is this, that when an individual labouring under continued fever happens to be seized with vomiting, without the tongue becoming red, without having thirst, or feeling any pain in the epigastrium, there is reason for thinking that it is not an increase of gastric irritation which has produced this vomiting. Neither do we think that it should be admitted without further proof that this nausea and vomiting, which depend not on gastric irritation, are to be attributed to the presence of bile, or mucus in the stomach, or to what Stoll called *gastric saburræ.* For, in such cases, pathological anatomy has no more proved the existence of such saburræ, than it has proved the stomach to be invariably red or softened. It is easier, then, to point out the circumstances to which this nausea or vomiting cannot be referred, than to mark the organic conditions which give rise to them. Do these phenomena depend on a disturbance of the innervation? We would be disposed to think so in a certain number of cases. May they also depend on a necessity felt by the system to modify, by the act of vomiting, either the secretion of the mucous follicles, or that of the liver, in order that the blood may then free itself from the principles which change its composition, either by their quantity or their qualities? This hypothesis might be supported by some facts. We might appeal, in its defence, to those well authenticated cases, in which persons presenting yellowness of the skin, foul tongue, constant nausea, or vomiting, and, at the same time, either having or not having fever, have been promptly freed from these symptoms after taking tartar emetic. Some of the cases detailed by us attest the truth of this remark.

To the facts of this kind already cited we shall add the following:

During the wet summer of 1829 several patients were seen by us to present the following state:—

After having experienced, for some days, general illness, headach, progressive diminution of appetite, those persons lost their strength; their countenance assumed a yellowish tint, in which the conjunctiva also participated; a thick coat of a yellow, green, or white colour, covered the tongue, which was broad, and not red in any one point of its surface; at first there was a bad taste in the mouth, then came on an inclination to vomit, and ultimately vomiting of mucous or bilious matter; several could not take the smallest quantity of ptisan into the stomach without instantly rejecting it; an annoying sensation of weight was experienced in the epigastrium; the abdomen, in every other part, was free from pain, and soft, sometimes, however, slightly distended; stools were ordinarily obtained only by lavement. There was at the same time febrile disturbance, which, in the course of the day, was not considerable, but which, every night, was characterised by an exacerbation not preceded by any shivering, but which ended every morning in a profuse sweat. Some of these patients were subjected to an expectant treatment, and they recovered very slowly; others were bled without any relief. In one patient the first febrile exacerbation which took place came on in the evening of the day on which leeches had been applied to the epigastrium. In no instance was the violence of the fever diminished after bleeding. In several, again, the tartar emetic was tried, and we were singularly struck with the prompt change for the better which immediately followed the use of this medicine, with some exceptions, which we shall notice presently. Once they took the tartar emetic, and had vomited copiously, the nausea and vomiting no longer returned, the febrile disturbance disappeared, and a rapid cure took place. In three patients, however, this did not occur; in one of them the employment of the tartar emetic was not followed by any change, good or bad ; in the other two the nausea and spontaneous vomiting also ceased, but the tongue became red and dry, the abdomen was slightly tympanitic, the yellow tint of the face, far from diminishing, increased, and a certain air of stupor was diffused over the countenance. In these two cases leeches were applied to the epigastrium, and the patients appeared to derive benefit from them. It is probable that, in the three patients now mentioned, and particularly in the two latter, there existed a morbid state different from that which existed in the others, to whom the emetic had been given with indisputable advantage. Perhaps these are those cases so often met in the practice of medicine in which lesions of a different kind are still indicated by identical symptoms ; but probably, also, it was a peculiar disposition in the individuals, which, in their case, rendered the employment of the tartar emetic useless or injurious. Be this as it may, by whatever conjecture we shall endeavour to explain the matter, we are warranted in inferring, from the preceding facts, that the same treatment does not always succeed, though employed in cases of diseases which bear the closest possible resemblance with respect to their symptoms. But this is certainly no reason for renouncing medical treatment, from which a skilful and experienced hand may often derive such great advantage. In that case we should renounce therapeutics altogether ; we should no longer employ quinine in intermittent fevers, nor opium to assuage pain.

On applying all that has been just said to the subject now before us, we shall establish as corollaries from the preceding facts, that, when nausea and vomiting exist with the other symptoms which have been just noticed, we may cause them to disappear, and at the same time improve the entire system, by giving a vomit ; and then the well-known adage, *vomitus vomitu curatur*—which, as a general principle, is false—is true in a certain number of cases, and rests on the observation of undeniable facts.

Unfortunately, and this must be admitted, there will still remain a certain vagueness in the practical determination of the cases in which it is proper to give the emetic, so long as, not knowing the morbid modification which is removed by the emetic, we shall have no other guide for its employment than the examination of the symptoms. For these symptoms may, to be sure, in their infinite shades, point out the change in the indications to be fulfilled ; they may also appear similar to us, their organic cause, however, being different. Here are no doubt great and serious difficulties ; but the first condition for making any advance is, thoroughly to know them ; and we think we have rendered some service, by pointing out these difficulties such as observation presented them to us. We may be tasked, to be sure, with hesitation and uncertainty of doctrine, but for this reproach we shall not care much, as we think it not right to be more positive in a book than at the bed-side of the patient ; and we sincerely pity the blindness and prejudices of those who, in practice, consider as solved the questions we have just started, whether they think that we may always determine with certainty the cases wherein it is useful to oppose tartar emetic to gastric symptoms, or whether they have taken it as proved that these symptoms, uniformly aggravated by emetics, should be combated in all cases by blood-letting. For our part, all we can positively say is, that neither are in the right.

It should be remarked, that nausea and vomiting are much more frequent at the commencement of the disease, and when it is still mild. These phenomena become more and more infrequent ; they even disappear, if they had existed, according as the fever becomes worse, particularly according as the adynamic symptoms come on. They appear to us to be so infrequent in this latter stage of the disease, that if they do occur then, there is reason to apprehend that they are the symptoms of peritonitis occasioned probably by an intestinal perforation.

The person, whose knowledge of continued fevers should be confined to the morbid changes so frequently found in certain parts of the digestive tube in these diseases, would no doubt be inclined to think that such serous lesions of the intestinal mucous membrane must be indicated by acute pains, and that these pains should constitute one of the most ordinary symptoms of most continued fevers. Yet, if he were to go through the cases contained in this work, in order to seek for this symptom, he would, on the contrary, see that the abdominal pain is completely wanting in a great number of cases; that, at other times, it is only transitory, and in a manner fugitive, and that it is even a little acute only in some cases, which are so rare that they may be considered as real exceptions.

Pain, when it does exist, may have its seat, first, over the entire abdomen, where it is, as it were, diffused; secondly, in some isolated points, and especially in the epigastrium, towards the ileo-cæcal region, around the umbilicus, in the course of the colon. It is in these different points that we must seek for it, first asking the patient whether he feels pain in any of these points; then trying to cause it by different degrees of pressure.

Some patients complain of suffering over the entire abdomen. Over the entire extent of this cavity they experience a dull sensibility, which is changed into pain by pressure. This general sensibility may be occasioned by irritation of the primæ viæ; but why does this irritation produce it in one case, and not do so in twenty others? Does the peritoneum then participate slightly in the lesion of the mucous membrane? Is it a sign that the intestinal villosities are more especially affected? To these questions no satisfactory answers can be yet given.

There is another case in which the pain, also extending over the entire abdomen, is no longer seated in the viscera of this cavity, but in the skin of the abdominal parietes, or in the subjacent muscles. This pain is much more acute than the preceding; very slight pressure on the skin is all that is necessary to produce it; and then it very often happens that pain is produced, no matter what point of the cutaneous surface may be pressed. This pain should be referred to a mere exaltation of the general sensibility; it ordinarily coincides with other nervous phenomena.

In some cases, on touching or pressing the abdominal parietes, we ascertained the existence of a pain, which was also very extended, but which still recognised another cause different from the preceding. It seemed owing to an effusion of blood which we discovered on opening the body in the muscular fasciculi of the abdominal parietes, and particularly in the recti muscles. In such cases the pain is occasionally very acute; the slightest pressure renders it very intense, and it might incline one to believe in the existence of a peritonitis.

The epigastric pain is far from being constant, and our observations on this subject are fully in accordance with those of M. Louis, who has found this pain absent in nearly one half of the persons whose bodies he has opened. This pain has been but seldom observed in the cases of dothinenterite, published by M. Trousseau, as also by M. Gendron. There is scarcely any mention of it in the work of MM. Petit and Serres. M. Bouillaud seems to have observed it most frequently.

When this pain exists, sometimes pressure alone occasions it; sometimes it is spontaneous. Patients complain of a constriction, a weight, or else a more or less intense heat in the epigastrium. The use of drinks rarely increases it; it may occupy the entire epigastrium, or be limited to one point of this region; and, in this latter case, it is principally on the level of the ensiform cartilage, in the point of the stomach corresponding to the cardia, that it is felt. In very few patients we have seen the pain exist more particularly towards the great cul-de-sac; in that point however, where, after death, the mucous membrane was most frequently found changed. Some patients refer the painful sensation they feel to a point higher up than the epigastrium; for instance, to the lower part of the sternum, to the extent of three or four fingers' breadth above the ensiform cartilage; others complain of something like a bar extended transversely from one of the hypochondria to the other, passing over the epigastrium.

In all these varieties the epigastric pain is generally obtuse; sometimes, however, it acquires such intensity, as to become a predominant symptom, and to call for special treatment.

Whatever be its severity, the epigastric pain varies with respect to its duration and the time of its appearance. It may commence with the disease, and continue during its entire course. After having existed from the commencement, it may promptly cease, whether the other symptoms are diminished or not. It may also appear at a period of the disease more or less remote from its commencement. We have seen some persons in whom, three or four weeks after the invasion of the disease, there had existed an epigastric pain, without any other appreciable derangement of health.

The epigastric pain generally indicates a state of irritation of the stomach, but it is not connected with any special lesion of this organ. It may present all the possible varieties of hyperemia, softening, and ulceration, without having ever been the seat of the least pain. On the other hand, the stomach has been found healthy in persons whose epigastrium had been the seat of pain. M. Louis mentions five persons whose stomach presented nothing remarkable, and who had had pains in the epigastrium. But he does not tell us whether these pains still existed at the time of death. The result of the observations of this author—a result which also corresponds with our own—is, that when the pain in the epigastrium co-exists with the vomiting of bile, there is every reason for thinking that these two symptoms combined are the result of a real inflammatory state of the stomach.

We should not forget that, in a very considerable number of persons attacked with continued fever, there is such a distension of the colon, that when the epigastrium is pressed, the pressure is on the colon and not on the stomach. Neither should we forget that, in many persons in very excellent health, pressure not at all violent, made on the epigastrium, occasions a painful sensation.

We have above pointed out the points of the abdomen, besides the epigastrium, which become more particularly painful. At these different points the pain may be spontaneous, or may be produced only by pressure. Oftentimes also it is not felt except when the patient has occasion to go to stool: it is then simple colic. But this latter symptom does not even necessarily accompany the purging which comes on at different stages of fever. There are some patients who have very copious and almost continual stools, without any painful sensation. There are others who feel nothing but a little heat towards the fundament.

In these cases, however, where the abdomen, when pressed in every point, is not found to be painful, the mucous membrane is most usually seriously altered. Confirming, by our researches, the splendid observations of M. Broussais with respect to the indolent character of several intestinal inflammations, we stated in the first edition of this work, that a person would be liable constantly to overlook the most severe cases of enteritis, if he would not admit its existence except when pain was present. Since the publication of our researches on this subject, numerous works, published by men of the most different schools, have demonstrated that the intestines may be very seriously affected without any pain being felt. We have also seen this pain absent: 1st. in cases of simple erythema of the mucous membrane; 2nd, in those cases where numerous exanthematous patches covered the inner surface of the small intestine; 3rd, in other cases where, instead of patches, there was observed in the small or large intestine only, a greater or less number of isolated papulæ (boutons); 4th, in cases also where ulcerations had formed either in the ileum, or on either surface of the ileo-cæcal valve, or in the cæcum, colon, or even in the rectum. We have met subjects in whom the ulcerations had nothing but the peritoneal coat for their bottom, and yet these persons had never felt any pain; and observe, that we here speak only of cases where the patients still enjoyed the free exercise of their intellect at the time we wished to ascertain the existence of pain in the several points of the abdomen.

There are cases where, after all the symptoms have disappeared, there still remains a diarrhœa which interferes with convalescence, and which it is important to combat. But what means should be employed, and should the choice of these means be regulated by the presence or absence of abdominal pain? We do not think so. We have very frequently met with these indolent diarrhœas, the cause of which anatomy proved to reside in intestinal ulcerations.

One of the most constant phenomena of continued fevers is the change observed in the alvine evacuations, which sometimes become more scanty, and sometimes more copious than ordinary.

Constipation, which is more unfrequent than diarrhœa, sometimes continues during the entire course of the disease, whether it terminates favourably or fatally. Thus, the person who forms the subject of the first case, and who did not die till the thirty-first day, had never any purging; no ulcerations were found in the intestines, but merely a tumefied state of the follicles of the small intestines, with redness of the cæcum. In other cases, the constipation exists only at the commencement of the disease; it is then succeeded by a diarrhœa, more or less profuse.

The diarrhœa may commence at different periods of the disease. With respect to the time of its appearance, the following cases should be distinguished:—

First Case. Appearance of diarrhœa, for a longer or shorter time, before all the other symptoms. Thus, several of our patients stated to us, that for several days, or even several weeks, before they were confined to bed, they had been seized with a purging, which, in some was continual, and in others appeared only at intervals. According as this purging was prolonged, they felt their appetite diminish, and their strength sink; at last they were attacked with fever, and then they entered the hospital.

Second Case. Simultaneous invasions of the diarrhœa, and of the other symptoms. This was the case with a certain number of our patients, who had not perceived the least alteration in their health; when on a sudden, after causes more or less appreciable, they were attacked at the same time with purging and fever. This purging was frequently very severe from its commencement. In some it did not commence till after a violent shivering.

Third Case. Appearance of diarrhœa several days after the invasion of the fever. It then very rarely succeeds to natural stools, more frequently to a more or less obstinate constipation; it sometimes comes on without any known cause, and sometimes follows the employment of something stimulating. We have more than once seen it come on, so as never again to be checked, after the patients had taken calomel, which had been given to overcome their constipation. In some it set in gradually, and at first its existence was scarcely perceived: at first, there were in the twenty-four hours only one or two stools of bad consistence. In others, it was very severe from the commencement. Patients who had been for several days without going to stool, have had suddenly, in the course of a few hours, a very great number of alvine evacuations. The sudden setting in of so severe a diarrhœa generally coincides with an aggravation of the other symptoms. It is frequently at this time that we see the form of what is called inflammatory, or bilious fever, pass rapidly to the adynamic or ataxic form. One of the most remarkable cases of this kind which we have had an opportunity of seeing is the following:—

A young man, just after being appointed an officer of health, was preparing to leave Paris, when he was seized with violent headach and fever. For ten days he presented the symptoms of inflammatory fever: the headach was very severe, and the bowels were constipated. He was repeatedly bled, but this did not diminish either the headach or the other symptoms: there was as yet nothing in his case decidedly alarming; the intellects had remained perfectly clear, when a few hours after the application of leeches to the anus, the constipation, which had continued till that time, was suddenly succeeded by very profuse diarrhœa. From this moment, sudden prostration set in, rapid sinking of the features, repeated epistaxis, dry and fuliginous state of the tongue, tympanitic state of the abdomen, extreme frequency of the pulse, subsultus tendinum, delirium, and death in less than fifty hours after the appearance of the diarrhœa.

Fourth Case. Appearance or continuance of the diarrhœa during convalescence. It is not a common circumstance for diarrhœa to occur for the first time when convalescence is established; but it is more common to see it continue, and even become more profuse, at the very period of convalescence. The diarrhœa is then often very inconsiderable, and does not attract attention; still the patient's strength does not return, or it again diminishes after having appeared to be re-established; the skin continues dry; after some time the pulse becomes a little frequent; a slight febrile disturbance appears, either constant, or only at intervals; the patient remains pale, as it were anemic, and it is quite evident that he is every day sinking. Yet the local symptoms, which can account for such a state, are often scarcely marked; the patients ask for food; their appetite and digestion appear good; the abdomen is soft, free from pain in every part, and there are at most but two or three stools in the twenty-four hours; sometimes even this number of stools occurs only every three or four days, and every twenty-four hours there is but one liquid stool. Notwithstanding this apparently mild nature of the local symptoms, the marasmus proceeds, and, after a longer or shorter time, the patients die. When their bodies are opened, there are found in the intestine, in the place of the aggregated follicles, ulcerations more or less extensive both in breadth and depth.

This is what takes place in certain cases; in others the local symptoms are more marked; the appetite is nearly gone; or else, if the patients still have a desire for food, it is badly digested, or it goes to increase the purging. The abdomen is a little sensible on pressure; the patients feel it painful even without pressure; the stools are more profuse than in the preceding case; they are more watery, and are sometimes tinged with blood. On opening the bodies of such patients no other lesion is found but that observed in the patients mentioned in the preceding paragraph; and here again is a case where, in consequence of certain dispositions of the system which escape us, identical lesions give rise to different symptoms. But a circumstance, which we shall not neglect to notice, is, that in these two cases, where the local symptoms referrible to the intestinal lesion are so little alike, the treatment should continue the same. In neither of these two cases have we seen tonic or astringent substances succeed. The identity of the lesions in these two cases sufficiently accounts for the identity of therapeutic results, which, by the mere consideration of the symptoms, we never could comprehend.

It has been said that diarrhœa indicated irritation of the large intestine; it has been given as the sign of colitis; and it has been affirmed that, as long as irritation was confined to the small intestine, constipation existed. Our observations by no means accord with these ideas. We have found, in several instances, the large intestine perfectly healthy through its entire extent, though, during life, and up to the moment of death, profuse diarrhœa had existed. It appeared to us sufficient to produce purging that the termination of the small intestine should be altered in any manner whatever. Here, again, the researches of M. Louis are confirmatory of ours.

Can the nature of the stools afford any information with respect to the nature or severity of the alteration which the intestine has undergone? We do not think it. Whether there be simple erythema of the mucous membrane, tumefaction of the follicles, or ulceration, we see the stools sometimes serous, and resembling water, tinged yellow or green; sometimes appearing to consist of nearly pure bile; sometimes mucus; at other times resembling pease-soup of a blackish brown colour, or of a grey ashy colour; at other times mixed with blood. There are cases where the latter fluid itself forms the entire matter of the stools; the quantity of blood voided by the anus is then sometimes very considerable; in some patients there is observed only one evacuation of this kind; in others it is several times renewed; the patients void at intervals, more or less remote, a stream of blood, which, when received into a vessel, might be taken for blood drawn from a vein. Should these evacuations be renewed or continued, they are followed by perceptible sinking of the subject, who soon dies in an adynamic state. On opening the body, blood is found accumulated in the intestine, and no other lesion. Whatever be the severity of such a hemorrhage, it does not invariably prevent the recovery of the patient. In all the cases which we saw the individuals died; but M. Louis has seen three cases where, notwithstanding this hemorrhage, recovery took place*. In two of the cases which he records the blood was voided in the form of clots; some blood had been passed during three, four, and six days successively., In these three patients there was at the same time epistaxis, which in one of them was very profuse. Again, the intestinal mucous membrane may exhale blood in great quantity without this hemorrhage being indicated by the nature of the stools. Thus, in one of our own cases, it was not discovered till the post mortem examination was made; the blood exhaled in the small intestine, which it filled, had not passed the ileo-cœcal valve.

If we consider diarrhœa in reference to the modifications which it may undergo from the therapeutic means, the different effects of which we have traced in our particular cases; first, we shall see that, in a great number of cases, the alvine evacuations were diminished or arrested after the application of leeches to the anus; whilst, in other cases equally numerous, these applications have had no influence whatever on the diarrhœa. With respect to the influence of emetics on diarrhœa, we may divide the individuals subjected to this treatment into four classes. In some the diarrhœa was increased, or showed itself for the first time after the administration of the emetic; in others the diarrhœa was momentarily increased, and then ceased in twenty-four hours; in other cases it ceased suddenly after the vomit; whilst in others it did not appear to be at all influenced by emetics. With respect to quinquina, and other tonics given in the form of lavement, we have never seen them stop diarrhœa. When directly introduced into the stomach, they have been followed several times by a cessation of the purging. We have not ascertained that any favourable effect was produced in any case of diarrhœa by topical irritants, whether applied to the upper extremities or to the abdomen. The diarrhœa of convalescents has been frequently diminished by the employment of the half or fourth part of the ordinary starch enema, to which there is added from five to twenty drops of laudanum.

In the preceding remarks we have only considered purging as an accident which increases the chances of the disease becoming severe ; yet some of our cases afford instances where, at the same time that the fever ceased, and the other symptoms improved, the diarrhœa, on the contrary, was visibly increased. In other cases we have seen it appear for the first time just at the very moment when also for the first time there appeared a tendency in the disease to a favourable termination. Sometimes again it comes on during convalescence, without appearing in any manner to interfere with its progress. It is facts of this kind no doubt which made the ancients think that in some continued fevers diarrhœa is *critical,* whilst in others perspiration constitutes the *crisis.* For our part we shall say that the cases of continued fever in which we saw the establishment of diarrhœa followed by any advantage are so few, that we cannot conclude any thing from them with respect to the *critical nature* of this phenomenon. Here, however, we thought it right to cite these cases, because facts cannot be useful except by considering them in every point of view, and it is not devoid of utility occasionally to subject to new inquiries those points of doctrine which under the influence of theories different from ours formerly occupied so extensive a place both in science and practice. Was it observation, or mere theory, that induced Huxham to lay it down, that delirium and disposition to coma disappear as soon as purging sets in ? Was it by facts that Pringle was led to consider diarrhœa as ordinarily serving for a crisis in the remittent fevers of which he has given us so valuable a description ? He recommended that the purging in these diseases should not be checked too soon. Grant also considered diarrhœa to be the natural crisis of putrid fever. In our opinion all these ideas rest on facts which are real but incorrectly interpreted. The authors just now cited had seen, as we did, that at a certain period of fever diarrhœa ordinarily comes on ; this is the fact, which observation must have supplied to them as well as to us. But with us, this diarrhœa is the natural result of the intestinal lesion, the existence of which has been ascertained in those diseases by anatomical research. With those whose theory taught them that every disease must terminate by the evacuation of the morbific matter, this diarrhœa which came on towards the termination of the fever must arise from nature's effort to accomplish this evacuation. In their time, as in our own, death must very often have occurred during the course of the diarrhœa ; but then they admitted that the crisis had not been sufficient. In a word, the most powerful argument which they thought could be adduced in favour of their theory was, that in attempting to check, and in actually checking the purging, much mischief was done. I admit this, for in order to accomplish this they employed irritating substances which suppressed the stools only by very much aggravating the gastro-intestinal lesion. It was not then the suppression of the crisis, as they called it, that was injurious, it was the increase of irritation which they produced in the primæ viæ. This is no doubt a very remarkable instance of the difference of the theoretical conclusions to which persons may arrive by setting out from one and the same real and well-observed fact.

---

* Since this was written, we too have met cases in which profuse intestinal hemorrhage, coming on during the progress of bad fevers, have not prevented the disease from terminating favourably. These hemorrhages take place in general only at a very advanced stage of the disease; yet we have very recently seen a case in which three pounds of blood at least were passed by the anus very near the commencement of the affection. The individual who forms the subject of this case had been ill but three days, and from that time he had fever without well marked symptoms, when, on a sudden, after having felt some colicky pains, he voided the above mentioned quantity of blood all at once on going to stool. After this discharge the patient was in a state of prolonged syncope. We gave him a small starch enema, with the addition of two drachms of extract of rhatany and a drachm of diascordium. Sinapisms were applied to the extremities, and a decoction of rice, with ice, was given him. The hemorrhage did not return; and the patient afterwards passed through the ordinary stages of typhoid fever, which terminated favourably.

We have already spoken of meteorism, of its most frequent seat, and of its connexion with the lesion of the intestinal mucous membrane. We have seen that residing principally in the colon ; it could not be accounted for by any of the alterations discovered in this intestine* by post mortem examination.

---

* The exhalation of a great quantity of gas into the intestine is so independent of an inflammatory state of this part, that, on the one hand, we see tympanitis developed in cases where there certainly exists nothing resembling an enteritis, as in certain neuroses, and, on the other hand, it is not observed in phthisical subjects, whose intestines present all possible varieties of inflammation. We do not remember to have seen well-marked tympanitis, except in one patient, of this latter description. This case appeared so much the more striking, as after having continued for a certain time, the gaseous secretion ceased all at once. This individual had purging, gases had been passed in great quantity by the anus, and yet the abdomen, which was very inflated, did not diminish in size. This tympanitis continued for nearly three

This meteorism does not usually come on till rather an advanced stage of the disease; it precedes or follows the occurrence of purging; it is sometimes only temporary, whilst sometimes, when once produced, it continues; it presents several degrees from that where it can be detected only by percussion, to that degree in which the colon is so distended that its form is accurately delineated through the abdominal parietes; when it has attained this degree, the large intestine occupies nearly the entire abdomen, and pressing against the diaphragm it produces most alarming dyspnœa.

Meteorism, to any extent, is a symptom which very much increases the unfavourable character of the prognosis. Whatever be its proximate cause, it always indicates a state of the system in which there is a great sinking of the powers of life, and progressive tendency to prostration, which is only aggravated by blood-letting.

Still, though this is a very alarming symptom, we must not forget that several of our patients who had it to a very considerable extent, recovered notwithstanding. We have not discovered any therapeutic agent which could act direcly on it.

CIRCULATORY APPARATUS.

SECTION I.

LESIONS FOUND AFTER DEATH IN THE CIRCULATORY APPARATUS.

We shall in the next place trace those lesions in the heart, arteries, and veins.

The heart, whose action is uniformly disturbed in persons affected with continued fevers, very rarely presented on the dead body any appreciable alteration. In the great majority of the cases already reported by us, the heart was found to be in every respect in its normal state. In fact, out of ninety-eight[*] cases of continued fever, which terminated fatally, only thirteen presented any trace of morbid change in the heart, and in some of those the change was very slight; thus in those thirteen we twice found nothing else than unusual paleness of the tissue of the heart. Another time this pale colour coincided with a flaccid state of the heart's parietes. On two occasions the muscular substance of the heart appeared to us to have lost its ordinary consistence, and six times it presented an unusual red tint, either in its substance, or on its inner surface.

If we compare, on the point of view now before us, our observations with those of MM. Bouillaud and Louis, we shall find a discordance between their results and ours. For, whilst the cases in which we have met the heart free from all appreciable lesion, are much more numerous than those in which the heart no longer appeared in its normal state, the two observers just named have arrived at the very opposite conclusion. Thus, in forty-nine autopsies, M. Bouillaud found the heart in its normal state only twelve times. In fifty-four autopsies, M. Louis found the heart in its natural state only twenty-seven times. It may be observed that the morbid changes found by them in the heart are of the same nature as those mentioned in our own cases. Thus the heart was found paler than natural three

---

weeks. At the end of this time the abdomen returned spontaneously in the course of forty-eight hours to its ordinary size, without the patient having passed by the anus more gases than on the preceding days. This patient died a little after. Cavities were found in his lungs, ulcerations and tubercles in the intestines.

[*] Only the more interesting of those ninety-eight cases have been here given.—Tr.

times by M. Bouillaud, and five times by M. Louis. It was found redder in its fleshy tissue, or on its inner surface, eleven times by M. Bouillaud, and three times by M. Louis. Again, the former observer found it diminished in consistence seven times, and the latter twenty-four times; but in these 31 cases, it was seldom that any considerable softening was observed; most frequently it was but a state of flaccidity, or else a less resistance than usual to the efforts made to tear the substance of the heart.

We shall see presently how far we shall be able to explain the difference of the results now noticed. We must say, however, beforehand, that we have been able to pay less attention than M. Louis to the changes in the heart's consistence, and that they may have escaped us several times, but the same thing cannot be said of the redness both of that of the heart and of the vessels, and we are quite sure, that every time we did not note this phenomenon, it did not exist.

To sum up, out of two hundred and one post mortem examinations of persons who died of continued fevers, we found one hundred and twenty-four in whom the heart was in its *normal*, and seventy-five in whom it was in the anormal state.

Let us now follow up our examination of the circulating apparatus in persons who died of continued fevers, by studying the state of the vessels in them.

In the sixty-five cases examined by us, we found the aorta coloured red on its inner surface only six times, and the veins in nearly the same proportion.

Out of the thirty-three other cases which also fell under our observation, there were seven in which we detected this same redness.

Our cases presented to us no other alteration in the vessels but this redness, with the exception of one in which we found some of the veins filled with pus.

Out of the forty-nine post mortem examinations of patients who died of continued fevers, reported in the work of M. Bouillaud, there were but eight in which this author detected any redness on the inner surface of the vessels.

In the four cases cited by M. Bouillaud, the individuals in question presented, after external lesions, or after accouchement, all the symptoms of adynamic fever, in whom, after death, several veins were found ulcerated on their inner surface, covered with false membranes, or full of pus.

Out of fifty-four cases observed by M. Louis, there were twenty in which the aorta was red.

Thus out of two hundred and one individuals who died of continued fevers, we find one hundred and fifty-five in whom the vessels were in a normal state, and forty-six in whom there was an anormal state of these same vessels.

But does this anormal state exist during life? Has it performed any part in the production of the symptoms? Is it produced only after death? Has it been taken for a disease, when it was but a cadaveric lesion?

Before discussing those important questions, we should remark, that both in the individuals who fell under our own observation, and in those whose cases have been reported by MM. Louis and Bouillaud, the symptoms differed in no respect from the symptoms observed in persons whose heart and vessels were found in the normal state. This identity of symptoms has also been observed by M. Louis. M. Bouillaud has thought that the symptoms of what is called inflammatory fever should be referred to an angeio-carditis, which was proved only by the red colouring of the internal surface of the heart and vessels. But on the one hand we have cited some instances wherein these symptoms were similar to those given by M. Bouillaud, as appertaining to inflammatory fever, and in which there was not any redness, either in the heart or in the vessels. On the other hand, M. Bouillaud himself states, that he has found this same redness in the fever called putrid or adynamic. He has also met it in a certain number of persons who died in the last stage of pulmonary phthisis, and who were wasted by hectic fever. This redness did not then belong exclusively to inflammatory fever, according to M. Bouillaud's own researches.

It was met in every fever; it might be its cause, or at least, its anatomical character. But who does not know that redness of the heart, as well as of the vessels, is wanting in a very great number of individuals who have died of some form or other of fever?

But further; this redness is not confined merely to cases of what are called essential fevers. We have frequently met it in persons who have died of diseases totally different. On referring to our notes, we find the following to be the results of our observations on this matter:—

1. State of the heart and vessels in persons who died of some other disease, whilst they had fever.

	Times.
In seven cases of acute peritonitis, there was redness of the heart and aorta	5
In five cases of puerperal peritonitis	3
In ten cases of acute pneumonia	1
In sixty-one cases of pulmonary phthisis with hectic fever	9
Total. In eighty-three cases of febrile disease	18

2. State of the heart and vessels in persons who died without fever.

	Times.
In thirty-one cases of organic lesions of the heart, there was redness of the heart and aorta	11
In nine cases of apoplexy	2
In five cases of chronic peritonitis	1
In thirteen cases of chronic gastritis	3
In two cases of cancerous affections of the liver	1
In four cases of ascites with atrophy of the liver	1
In six cases of encysted dropsy of the ovary	2
In five cases of tetanus	2
Total. In seventy-five cases of disease not febrile	23

On comparing the result of No. 1 with that of No. 2, we see that fever seems to be so little either the effect or the cause of the redness of the heart and vessels, that this redness is found more frequent in the second table, containing cases of persons who died without fever.

If in all these different cases, as well those of continued fevers, as others, we examine, by way of comparison, the redness of the inner surface of the heart and vessels, we find it always the same; it is always a uniform colouring, entirely different from the numerous shades of inflammatory redness observed everywhere else. It is a colouring similar in appearance to the yellow tint presented after death, either by the internal surface of the gall-bladder, or the portion of intestine in contact with it. In such cases the vessels never presented those different degrees of injection, and other alterations, which M. Gendrin produced, either on their internal surface, or in the substance of their tunics, by irritating those organs in animals.

Let us now endeavour to appreciate the nature of the changes found in the heart and vessels of persons who have died of continued fevers, and let us strive to determine the part which they have performed in those diseases of similar morbid changes.

Those changes are reducible to the following:—

1. Thickening and ulcerations of the internal membrane of the veins;
2. Pus, or false membranes in the interior of these vessels;

3. Diminution of the heart's consistence ;
4. Loss of colour of the fleshy substance of the heart;
5. Redness of the internal surface of the heart ;
6. Redness of the internal surface of the arteries ;
7. Redness of the internal surface of the veins.

The thickening, and ulcerations of the veins, the false membranes deposited on their internal surface, show that those vessels were the seat of a process of irritation; in this process it might be the origin of the disease, or, at least, it might have its share in causing some of the symptoms. This took place in the case cited by M. Ribes: after a gangrenous phlegmon of one of the hands, phlebitis came on, then ataxo-adynamic symptoms, in the midst of which the patient died (delirium, livid countenance, meteorism, black incrustations of the tongue and teeth, &c.) On examining the body, the veins were found filled with pus, their parietes thickened, and their internal surface ulcerated. M. Breschet, more recently M. Dance, and M. Le Gallois, have cited cases of phlebitis, which seemed to be the origin of the adynamic fever. But we have no hesitation in stating that out of one hundred cases of persons who have died of typhus fever, there is scarcely one found where the veins shall present any of the alterations now in question.

With respect to the cases where we find nothing else in the veins but pus mixed with blood, that is no proof that there was disease of these vessels ; for it may have been absorbed by them. But its presence in the blood may be considered as producing real poisoning ; the result of which may be the symptoms of adynamic, putrid, typhoid, &c. fever *.

Here, then, are cases wherein the changes found in the vessels were produced during life, and performed an evident part in the symptoms.

Let us now try whether the same may be said of the other morbid changes.

Had the diminution in the heart's consistence, so often noticed by M. Louis, any share in the production of the disease? We do not think so ; for we have found it in several other cases, where the individuals having died of the most different diseases, whether acute or chronic, presented no symptom of typhoid fever. Neither do we think that we can attribute this diminished consistence to an inflammatory state of the heart. We think that the softening of the heart's tissue is very frequently a state produced only after death. In fact, almost every time that we opened the bodies of persons in whom there were manifest signs of putrefaction a little advanced, we found the tissue of the heart remarkably soft ; it was so friable, that very slight dragging was sufficient to tear it ; even the finger could be forced into it with the greatest ease. But there are bodies in which putrefaction commences much sooner than in others ; in these the heart may be found very soft, though the examination may have been made only a little time after death. This cadaveric softening is ordinarily accompanied by a livid or purple redness of the heart's tissue. In the cases where it may be supposed that the diminished consistence took place during life, its cause escapes us ; and far from considering it a lesion, which could be the origin and cause of the symptoms, we might be rather inclined to admit that the softening is one of the products of this same disposition, which, with any lesion whatever, produces in some persons the state called adynamic ; or which, still continuing its influence after the termination of life, liquefies the blood prematurely. These are points to be illustrated by new researches. Only we shall here observe, that there are subjects in whose body there is found, at one and the same time, a singular diminution in the consistence of several organs : the heart, lungs, liver, spleen, and kidneys, all present remarkable friability ; they present no other lesion, and it is no longer after such or such a dis-

---

* This point of doctrine has been particularly elucidated, in latter times, by the writings of MM. Ribes, Gaspard, Breschet, Bouillaud, Blandin, Velpeau, Gendrin, Dance, Le Gallois.

ease, that a similar state is found. We have cited a very remarkable instance of this general softening in a former part of this work.

Neither is the loss of colour of the fleshy substance of the heart, which has been observed in some who have died of typhus fever, peculiar to this kind of disease, and, in the present state of science, we cannot assign to it any share in the production of some of the symptoms of fever.

We have already seen that redness of the inner surface of the heart and vessels may be met in an almost equal proportion after all diseases. Let us see, however, what may be its influence on fevers ; for this purpose let us study its nature, and investigate the causes of its devolopment.

The following table, drawn up from the observations of MM. Louis and Bouillaud, and from several of our own, will present at first a remarkable coincidence between the frequency of redness in the heart and vessels in the different months of the year, and the elevation of temperature in these months.

Number of times the redness was found.		Number of times the redness was not found.	
January	3	January	10
February	1	February	8
March	4	March	2
April	3	April	3
May	2	May	3
June	6	June	8
July	9	July	3
August	14	August	4
September	6	September	2
October	3	October	4
November	2	November	8
December	4	December	13

On considering this table, it will be found that during the four months when the temperature is lowest (November, December, January, and February), redness of the vessels has been observed less frequently than in the other eight months ; that during the four months when the temperature is at a mean (October, March, April, May), this redness was detected more frequently than in the winter months, but much less frequently than in the four months of the year when the temperature is most raised (June, July, August, September), and yet in these four last months the redness of the vessels is not found with equal frequency in each. The months of June and September present less cases of redness than the months of July and August, and, in a word, it is during the latter, which is in general the hottest month of the year, that the greatest frequency of vascular redness is found.

If we now proceed in a similar way for other diseases besides fevers, we shall again arrive at a similar result ; and we shall always find that the hottest months of the year are those in which redness is most frequently found on the internal surface of the heart and arteries, so that the following law may be laid down :-

Whatever may have been the disease which occasioned death, the frequency of vascular redness is proportioned to the elevation of temperature.

This law includes in it the consequence that the temperature acts a considerable part in the production of the red tint of the heart or vessels.

Still mere elevation of temperature cannot account for all the cases wherein this red tint is found, since, on the one hand, it is present in cases where the dead bodies were subjected to a very low temperature, and, on the other hand, it is wanting in individuals whose bodies were examined during the warmest months. The solution of the problem before us calls for the introduction of new elements.

One of the most important of these elements is, no doubt, the time which elapsed from the moment of death to the time when the body was examined.

In one hundred and ninety-two persons who died of continued fevers or of other diseases, in which the number of hours that elapsed before the autopsy took place was noted by us or by others, we found that redness or paleness of the internal surface of the heart or vessels was distributed in the following manner :—

Time which had elapsed since the patient's death. Hours	Cases of redness.	Cases of paleness.
10	2	0
11	0	1
12	0	1
13	0	1
14	0	2
15	1	3
16	0	4
17	0	5
18	1	4
19	1	7
20	1	6
21	1	12
22	1	11
23	3	8
24	6	10
25	2	5
26	2	6
27	2	2
28	6	1
29	3	0
30	9	2
31	7	0
32	0	0
33	1	1
34	6	2
35	3	0
36	7	2
37	4	0
38	3	0
39	1	0
40	6	0
41	0	0
42	3	0
43	4	1
45	1	0
46	0	0
47	0	0
48	5	0
53	2	0
60	5	0

The following are the results of this table : we find

	Cases of redness.	Cases of paleness.
In the first 24 hours after death	17	74
From 24 hours exclusive, to 30 hours inclusive	24	16
From 30 hours exclusive, to 40 hours inclusive	38	5
From 40 hours exclusive, to 60 hours inclusive	20	1

These results induce us to lay down the following law :—

The frequency of the cases wherein redness is found on the internal surface of the heart or vessels, is proportional to the length of time which elapsed from the moment of death to the moment when the body was examined *.

Combining this law with the preceding, we come to the conclusion that whatever may have been the disease and the kind of death, the frequency with which vascular redness is observed depends on the greater elevation of temperature at the time the body is opened, and on the length of time that has elapsed since the patient died.

Still, are these two conditions, which act only by favouring the development of putrefaction, the only ones which produce the red colouring of the heart and vessels? Certainly not; for on the one hand, we find this colouring in two bodies which were opened only ten hours after death during the months of March and December ; we find it in another body which was opened fifteen hours after death during winter. On the other hand we find this same red colour wanting in a body which was opened forty-three hours after death in the month of June, and in two other bodies which were opened thirty-six hours after death, in the months, however, of November and January.

How shall we account for these cases? Shall we say that the redness, which is cadaveric in some, is not so in others, and that it must then be considered as

---

* By means of this law we can perfectly account for the very small number of times that we detected redness on the inner surface of the heart or vessels in the cases contained in the present part of this work. Convinced of the great importance of opening the body as soon as possible after death, we very seldom made a post-mortem after twenty-four hours, and very often the autopsy took place before this time.

having existed during life, and as being of an inflammatory nature? Such a distinction could not be admitted; but we think that, according to the nature of the disease of which the individuals died, as also according to the kind of death, putrefaction may commence at very variable periods, and that in such cases the phenomena which announce it may manifest themselves a very few hours after death. We have a striking instance of this in our 47th case. One of these phenomena is the spontaneous separation of the elements of the blood, the return of this blood to the liquid state, and its imbibition by the solid parts with which this liquefied blood is brought in contact.

Thus, then, during winter, and at a period not far distant from the time when death took place, the vessels may happen to be found coloured, whether the blood which they contain may or may not at the same time have become liquid. This is still but a cadaveric phenomenon, still attributable to the special conditions in which the nature of the disease consigned the subject to the influence of physical laws at the time when life was extinct in him.

With respect to the very few cases in which, notwithstanding the length of time since the patient's death, the vessels were found white, we must, in order to account for them, admit a disposition the reverse of the preceding, in virtue of which putrefaction, far from being advanced, was, on the contrary, retarded.

It may also be remarked, that the cadaveric phenomenon of vascular colouring is not the only one which thus partly depends on the circumstances, whether physical or organic, in the midst of which life was extinguished. Do we not, for instance, observe varieties, according to the individuals, in the colouring of the intestines with bile, in the presence of serous or sanguineous effusions into different cavities, etc.*?

From what has been just said, we shall draw the following corollaries:—

1. The red tint, which is occasionally observed on the internal surface of the heart and vessels in persons affected with continued fevers, performs no part in the production of some of these fevers; it does not even concur in the production of any of their symptoms.

2. This red tint is observed indiscriminately after all diseases, after those accompanied with fever, as well as after those which were free from fever.

3. It should be considered as a cadaveric phenomenon, the more or less rapid production of which depends on certain conditions, which may all be resolved into a single one, namely, the more or less rapid tendency of the dead body to putrefaction.

The blood contained in the heart and vessels of persons who have died of bad continued fevers has engaged particular attention in latter times. It has been said, that after these diseases the blood has been usually found altered; sometimes, it is said, the clots which it presents are remarkable for their extreme softness; sometimes these clots do not even exist; the fibrine is now observed in the form of small fragments, without cohesion, which floats scattered through a reddish serum; sometimes these fibrinous fragments disappear, and the blood now presents everywhere nothing but a completely liquid mass, either of a deep black colour, or of a clear rosy tint, resembling, in this latter case, water in which a small quantity of red colouring matter was dissolved.

We have met these different appearances of the blood in several bodies of persons who died with the symptoms of bad fever (cases 8, 11, 13, 14, 24, 25, 29, 32, 47). In the subject of the 14th case, the heart contained clots similar to those usually found in dead bodies, but the liquid contained in the aorta did not resemble blood; it was a matter having the colour of wine lees, as it were sanious in some parts, bearing some resemblance to the unhealthy fluid contained in some abscesses.

---

* By these different facts, the law laid down by M. Dutrochet will be further confirmed, in virtue of which *exosmosis* has a tendency to replace *endosmosis* every time that a liquid contained in a cavity has a tendency to putrefy.

But in several other subjects who, during life, still presented symptoms similar to the preceding, we found no such appearance; the blood contained in the heart and vessels presented the appearance observed in most dead bodies; it consisted of a clot of greater or less consistence, deprived, or not, of colouring matter.

If we now inquire what are the different appearances which the blood presents in the bodies of persons who have died of other diseases besides bad fevers, we shall also find that, in those diseases, whatever may have been their nature, the heart and vessels occasionally contain a liquid dissolved blood, like the blood of some typhoid fevers; and we think, that if the number of the cases where the blood presented this appearance appears to be greater in typhoid fevers than in other diseases, it is because more particular attention has been paid to this point in fevers.

For our own part, we shall say that, since we applied ourselves to the examination of the blood in all dead bodies, we have several times found it in a liquid state in every species of disease; and, to speak only of the cases contained in this present part, it will be recollected that such was the state of the blood in the individual affected with tetanus, who forms the subject of case 30.

Thus, then, in continued fevers, the cases in which the blood is found perceptibly changed are not more numerous than those wherein the blood presents what we consider its normal state; the cases of fevers where this liquid appears altered differ in no respect with regard to the symptoms from those wherein it appears not to be so; and, in a word, similar alterations of the blood are observed after other diseases which bear no resemblance whatever to typhoid fevers.

Among the cases wherein the blood is found liquid in the vessels there are some in which this liquid state coincides with different signs of putrefaction. We then, at the same time, find the parietes of the heart softened, and a red tint is observed on its internal surface, as also on that of the vessels. This liquid state of the blood is likewise more frequently met when the bodies are opened during an elevated temperature, and a long time after death. However, there are other cases where this is not the case; then it must be admitted that causes inherent in the subject himself prevented the blood from coagulating in the dead body, or, after it had coagulated, accelerated its return to the liquid state. We have sometimes found the internal surface of the vessels white, notwithstanding the liquid state of the blood which was in contact with it. But we think it probable that, in cases of this kind, the vessel would have been found coloured, if the body had been opened at a later period.

If, with respect to the state of the blood in persons who died of continued fevers, we compare our own observations with those of some other authors, we shall find that they have obtained results similar to ours. Thus, in the Observations on Entero-Mesenteric Fever, published by MM. Petit and Serres, there is no mention of the liquid state of the blood, though in all these cases the state of the heart was carefully noted. Neither has M. Trousseau noticed this liquid state in the cases of Dothinenterite which he has published. M. Bouillaud, who admits, in a general way, that in bad fevers the blood is found to be liquid and dissolved, has, however, met this state of the blood only in three cases in fifteen cases of putrid fever detailed in his work. Among the fifty-four cases of M. Louis there are but three where mention is made of the liquid state of the blood; and the well-known accuracy of this physician is a sufficient guarantee that, if he had met it oftener, he would not have failed to mention it.

We therefore think we may lay it down that, in the present state of science, the part ascribed to the blood in the production of a certain number of bad fevers may be much better proved, either by the nature of the external influences which have acted on the individuals, or sometimes by the nature of the symptoms themselves, than by the existence of those changes in the blood discoverable by anatomy. Let us not again compromise the cause of humourism, by requiring from the facts within its domain more than they are yet able to give*.

The spleen of which we shall here speak, as being a probable dependent on the circulating apparatus, is one of the parts which has been most frequently found changed in individuals who have died of continued fevers. In the great majority of cases we found it at one and the same time perceptibly increased in size, and very much softened. By gently pressing it under a stream of water, there was forced from it a considerable quantity of a substance resembling wine lees, and by thus reducing the spleen to its parenchyma, which was not changed, it was restored to its natural size. Its increase in bulk then depended on the unusually increased quantity of matter contained in its cells, as its soft state was owing to the diminished consistence in the same substance.

In one case only have we found the spleen both softened, and small in size.

In another instance, we saw it very small, and very dense. We have sometimes found the spleen in its normal state, both with respect to its size and consistence.

Thus the very remarkable alterations of the spleen in continued fevers, are almost as frequent as the intestinal alterations are in these same diseases; but they are not more constant than the latter, whatever be their extreme frequency.

The most ordinary lesion presented by the spleen in continued fevers, namely, increase of size with softening of its tissue, is not connected with the existence of dothinenterite. We have met it without there being in the intestine any trace of an affection of the follicles, but merely an intestinal erytheme.

We have also observed increase in the size of the spleen, with softening of its tissue, in several other cases where the digestive tube was perfectly healthy, and where the typhoid symptoms had their origin and cause elsewhere.

On the other hand, two cases presented the spleen in its normal state, though the small intestine was ulcerated, and the mucous membrane of the stomach was red in one case, and brown in the other.

Neither is softening of the spleen, with increase in its size, connected with certain states of the blood. Whatever the appearance of the latter was, we found the same lesion in the spleen.

This lesion forms from the very commencement of the disease; thus M. Louis found the spleen soft and large in two individuals, one of whom died on the 8th, and the other on the tenth day of the disease. We also detected the existence of this lesion in an individual who died on the 11th day. On the other hand, we also found it in persons who died at all periods of the disease, even up to the forty-sixth day. It would appear from the researches of M. Louis, that the spleen was more frequently found large and soft, in persons who die before the thirtieth day, than in those who die after this period.

Again, it is not only in persons who die of bad fevers, with or without morbid alteration of the digestive passages, that the spleen is found to be much softer than seems to be compatible with its normal state. We have found this same soft state carried to an extreme degree, in the bodies of individuals who died of diseases of the most different characters, with fever or without fever, and in whom no particular symptom had indicated softening of the spleen. But what appears satisfactorily proved is this, that this organ is not found softened in any disease as frequently as in continued fever; more particularly in none is it found so frequently increased in size.

In the present state of science, we can offer only mere conjecture with respect to the cause which, in continued fevers, thus diminishes the normal consistence of the spleen, at the same time that it increases its size. We cannot say more regarding the nature of this lesion. We shall only remark, that Dr. Bailly has also ascertained its existence in individuals who died during the accession of bad intermittent fevers, whatever may have been the prevailing symptoms of this fever. We may now observe, that so frequent a lesion should not be lost sight of, every time we endeavour to trace the causes and nature of fevers.

---

* We should not, however, forget that the experimentalists, who injected putrid substances into the veins of animals, say that they found the blood in a liquid state

The physician just mentioned has published several cases of bad intermittents, where the softening of the spleen was carried so far that this organ was actually torn. We have observed this spontaneous rupture of the spleen only once, and that in the case of an individual who had had follicular enteritis with typhoid symptoms. This man, who was twenty-five years of age, died at the Pitié, after being nine or ten days ill; it was remarked, that a few hours before dying, he suddenly began to sink; on the preceding day, in the midst of his delirium, he had fallen from his bed on the floor.

We found several pounds (livres) of black, liquid blood, effused into the peritoneum: we instantly examined whether some large vessels had not been ruptured; we discovered no alteration in any of them; but the spleen presented, on its external surface, two oblong rents, through which the blood contained in this organ, seemed to have escaped, so as to fill the peritoneum. This spleen, which was very large, was reduced to a real black softish substance, by the slightest pressure. We reckoned in the intestine forty elliptical patches, all projecting above the level of the mucous membrane; only one of them was commencing to ulcerate. Between them the pale mucous membrane was traversed by a great number of solitary cryptæ, very much developed. These same cryptæ existed in the large intestine. The mucous membrane of the stomach presented a bright red pointing through the entire extent of the great cul-de-sac; in every part where it was red, it was softened.

SECTION II.

LESIONS OF THE CIRCULATORY APPARATUS OBSERVED DURING LIFE.

The functional disturbances of the circulatory apparatus, generally comprised under the generic term fever, will be better studied, and better known, if, as we have done elsewhere, with respect to the term *inflammation**, we consider separately and distinctly each of the phenomena which concur with others in the production of the complex and indeterminate state called *fever*.

The pulsations of the heart in our patients presented nothing but different degrees of frequency and strength, always proportioned to the different degrees of frequency and strength in the pulse.

The circumstances to be studied in the arterial pulsations are: 1st, their strength; 2nd, their frequency; 3rd, their regularity.

Nothing was more variable in our patients than the strength of the pulse. Sometimes from the very commencement of the affection, it was small, and extremely compressible. At other times it retained considerable resistance up to the moment of death, and gave a sensation of fulness to the finger which pressed it. In some of our patients we saw life cease, when the pulsations of the artery had still considerable strength. In several individuals, the pulse was neither stronger nor weaker than in the ordinary state of health. In general, possessing considerable strength and fulness at the commencement of the disease, it continually became weaker and more compressible, according as the adynamic symptoms became more marked. However, in a considerable number of cases, the strength of the arterial pulsations formed a striking contrast with the state of prostration into which the patients appeared to have fallen. In several the pulse, very weak at certain times of the day, was raised, and acquired considerable strength, particularly towards night.

---

* Pathological Anatomy.

The frequency of the pulse was found to be increased in the great majority of cases ; it was generally more considerable at night. When this frequency is such as not to exceed from ninety-five to one hundred and twenty pulsations in the minute, this sign, separately considered, should incline one to form a favourable prognosis. This prognosis, on the contrary, becomes very unfavourable, if the arterial pulsations exceed one hundred and forty per minute, and particularly if their frequency has not diminished, or has increased after several abstractions of blood.

In the great majority of our patients, the pulse becomes frequent only a longer or shorter time after their health has commenced to be deranged ; in some, the acceleration in the circulation was preceded by mere general illness, without any local functional disturbance that was at all perceptible ; sometimes, and this case was more usual than the preceding, there were different symptoms referrible to the digestive organs, and particularly diarrhœa.

In other patients, the acceleration in the circulation, accompanied with elevation of the skin's temperature, preceded every other morbid phenomenon, and it was to no purpose then that one should endeavour, by interrogating only the symptoms, to seek the cause of this disturbance of the circulation in the suffering of any organ ; this febrile disturbance continued thus, distinct from every other apparent disorder, for between twenty-four to fifty hours : then local disturbances came on, and they were almost invariably directed towards the primæ viæ.

In others the acceleration in the circulation, with increased heat of skin, and without any other apparent local disturbance, continued for a much longer time, and after having lasted for several days, the fever ceased without our being able to detect in the system any other lesion than the fever itself. However, we must not forget that in some cases of this kind which terminated fatally, we found in the intestine traces of an acute affection of the follicles. In these numerous cases of slight fevers, without any appreciable local disturbance, and which terminated in a return to health, did this termination take place spontaneously and merely by adopting an expectant mode of treatment, or in consequence of a shock being given to the system either by emetics or bleeding? We certainly would not say so ; and in this case, till more ample information be obtained, is it not strictly conformable to the true scientific spirit to give a denomination derived from the symptoms to a disease, the organic cause of which can frequently be only suspected or admitted by an analogy, which is any thing but accurate, since it is not to be doubted that what are called essential fevers may have their seat elsewhere as well as in the digestive tube ?

Lastly, in several patients we have seen all the local symptoms disappear, and yet the febrile disturbance still continue for some days. Has all local lesion disappeared then, or does it still continue, but indicates itself only by the disturbance of the circulation ? We would be more inclined to admit this second hypothesis ; and to give it some weight, we would refer to those cases of pneumonia, which at a certain period of their existence, are indicated only by fever, all the local symptoms having completely disappeared. In these cases, before percussion and auscultation were understood, it would have been said that the fever survived the pulmonary lesion ; and yet, though there is then neither cough, nor dyspnœa, nor expectoration, nor thoracic pain, auscultation shows that the lung is far from having returned to its normal state.

We must distinguish the case of which we have now spoken from that where, after the disappearance of all the symptoms, no other irregularity is observed except mere frequency of the pulse, which is oftentimes connected with the state of convalescence, which is kept up by continuing meagre diet for too long a time, and which disappears according as the patient takes nourishment and recovers strength.

The pulsations of the heart and arteries, instead of being accelerated, become remarkably slow in some of our patients; or else, in the midst of the most alarming symptoms, they scarcely deviate from their normal state. We have principally observed this natural state of the pulse, or its slow state, in cases where the nervous symptoms predominated. It has served us, in several cases, to distinguish a fever which had its origin in the brain from another, the organ of which was in the digestive tube. However, even in this latter case, and with the existence of a dothinenterite, it may happen that there will be a slow pulse.

Slowness of the pulse in persons labouring under bad fevers has been noticed by several observers, and they have generally considered it as a very unfavourable sign. But what they have not stated, and what we have several times observed, is, that certain individuals, whose pulse had been frequent during the entire course of the disease, present remarkable slowness of the pulse at the time of their convalescence. One person, among others, had had all the symptoms of what is called adynamic fever. At the time when he might be considered as completely convalescent, the pulse which had gradually lost its morbid frequency, became all at once very slow: for some days it was but from 36 to 38 per minute; it then rose to 40, then to 50; and when the individual left the hospital in a very good state of health, his pulse was from 70 to 72, which was proportioned to his age and constitution.

We have but seldom observed irregularity of the pulse; in the cases in which it took place, we have not seen that this character of the pulse exercised any influence on the other symptoms, on the progress of the disease, on its severity, or on its termination. In one of the cases in which we found the pulse irregular, there was a great quantity of worms in the digestive tube. One patient presented to us a curious anomaly: his pulse, irregular as long as the affection was slight, became regular according as the symptoms became unfavourable. In another, the pulse, after having presented the greatest regularity during the entire course of the disease, became irregular during convalescence. Every time we found the pulse irregular in persons labouring under continued fever, we have been inclined to suspect that this irregularity depended less on the disease then present than on an organic lesion of the heart, and, on seeking for the latter, we have frequently detected its existence in such cases.

The modifications which the pulse undergoes in point of frequency, almost always bring with them some modification in the temperature of the skin.

Most frequently, in continued fevers, an increase in the frequency of the pulse is accompanied by an increase in the heat of the skin; but we do not always observe a strict relation between an acceleration of the circulation and increase of temperature. The heat may be very intense in cases where the frequency of the pulse is but moderate; this heat may, on the contrary, be scarcely developed in other cases where the pulse has become extremely frequent.

More frequently than in any other disease, increased heat of skin coincides in bad fevers with a peculiar dryness of this membrane. It is in these affections principally that we observe that acrid heat in which the skin at times cannot be touched even for a few moments in succession without experiencing an uneasy sensation, and sometimes even real pain.

In the greater number of patients the increase in the skin's heat becomes more considerable towards evening. What particularly struck us in some was a great inequality in the distribution of the heat. In others, one and the same part presented for some hours the most rapid alternations of an almost icy coldness and extreme heat.

Increase in the temperature of the skin does not necessarily follow every intestinal irritation, however intense the latter may be; we have seen cases of dothinenterite of a very acute form, and which reached the stage of ulceration, when death supervened, in which, however, the temperature of the skin always remained natural. We have seen among others a striking instance of this in the young girl who forms the subject of our 18th case. In her, the intestines were found very much ulcerated, and yet it was only forty-eight hours before death that she presented any heat of skin. In this patient nervous symptoms chiefly predominated; during life everything seemed to indicate that the seat of the disease was in the encephalon, or rather in its membranes; still it was only in the intestines that any lesion was detected. From this fact we shall draw the conclusion that absence of heat of skin in an individual who presents the symptoms of what is called ataxic fever, is not, as has been stated by some, a sufficient reason for asserting that the disease has not had its primary seat in the digestive passages.

Though in most cases the heat of skin disappears some hours before death, we have seen instances in which life ceased at a time when the temperature of the skin was very high; we have seen other cases in which it was only during the last days of existence that the skin was hot.

The diminution in the temperature of the skin may appear under different forms, and at different periods of the disease. First, in several cases, the commencement of the disease is ushered in by that sensation of cold which constitutes shivering. After some moments or some hours, it is succeeded by heat, and does not re-appear. But this shivering at the commencement of the disease is very frequently entirely absent.

Whether the disease may have commenced by shivering, or whether it comes on only after some days of general illness, namely headach, loss of appetite, and even diarrhœa, or whether the fever may have set in without having been preceded by any shivering, it happens, in some cases, that during the course of the disease the shivering appears periodically, most commonly towards evening; sometimes every day, sometimes only every two days. This shivering is followed by an intense heat, and the latter is succeeded often, but not always, by sweat more or less profuse. These accessions may be renewed a certain number of times, they then cease, and the disease assumes a simple continued form. We have seen these accessions disappear after the employment of the most opposite means, sometimes blood-letting, sometimes quinquina, sometimes emetics; at other times we have seen them disappear spontaneously, after the patient had continued for some days in the hospital.

In the greater number of our patients we observed no alarming symptom to accompany the return of these accessions; in others they resembled genuine accessions of malignant fever. In one of these cases the return of these accessions seemed to be prevented by the administration of quinquina in the form of lavement; in another case this means was not resorted to, and death took place after the third accession.

In persons labouring under bad fevers other forms of cold are observed which no longer resemble the shivering or febrile accession. We then observe the skin suddenly lose its heat, either over its entire extent or in some parts only, and present a cadaveric cold feel, which sometimes continues till death, and is sometimes followed by the return of heat *.

---

* The cadaveric coldness is not invariably an infallible sign of death. We had recently an opportunity of seeing an individual labouring under a chronic affection of the stomach, in whom, two months at least before death, the skin was so very cold three or four times, that one would imagine that he was touching a dead body. At the same time the pulse was gone, and the respiration became almost imperceptible; the patient seemed in the last struggle. This state continued for twenty hours, then the skin became hot again, the circulation was re-established, and the individual returned to his natural state.

We have seen some patients in whom the continued fever had been preceded by fits of intermittent fever. We have seen other patients in whom intermittent fever came on during convalescence from continued fever.

One of these patients was a girl 16 years of age. When she entered the Charité she had a slight continued fever, which yielded to strict regimen and rest. Being convalescent for a little time she did not recover strength; her countenance was very pale; she felt at intervals transient shiverings followed by heat, but never by sweat. Sometimes these attacks appeared only every four or five days, sometimes they returned several times on the same day. The patient continued in this state for three weeks. At the end of this time she had six regular fits of tertian fever, the return of the seventh was prevented by the employment of quinquina. The patient soon left the hospital in good health.

The other patient, convalescent from an inflammatory fever, was preparing to leave the hospital, when, without any known cause, he was attacked with a well-marked tertian fever. It was cut short by quinquina, after the sixth fit.

A third patient was also labouring under a continued fever when he entered the hospital. After about ten days, the pulse being but of moderate frequency, a violent shivering, followed by heat and sweat, took place in the afternoon. Three similar fits re-appeared on the following days, under the tertain type. In the intervals between the fits there was complete apyrexia. This intermittent fever ceased spontaneously after the fourth paroxysm.

We have already seen the appearance of the blood after death, both in the heart and vessels. Let us now recapitulate the results of our observations with respect to the qualities of this same blood when drawn from the vein during life.

Out of a great number of cases of venesections in which the state of the blood is described, we find but twelve in which the blood presented a buffy coat, which was rarely thick and dense, but most frequently thin and soft. Among these, two who had the vein opened twice, yielded blood which presented no buffy coat the first time, and buffed blood the second time. In one of these there was nothing to account for this difference in the appearance of the blood at the two bleedings. In the other the second bleeding was employed to combat a pneumonia which had come on during convalescence; but every time there was a complication of pneumonia, still no buffy coat was observed. Then the individual who forms the subject of the first case was bled three times; the third bleeding, which was resorted to during the existence of a pneumonia, was not more buffed than the other two.

In several patients the crassamentum was remarkable for its great softness, and for the total absence of retraction.

In others the blood drawn from the vein presented an appearance which indicated a more marked change of this fluid. Thus in the subject of our seventeenth case, the blood resembled currant jelly; and it was in this same case that the aorta was found after death filled with a peculiar sanious sort of blood already described. The blood was not less changed in one of the individuals affected with small-pox, whose case has been given; beneath a very thick buffy coat we found no trace of crassamentum, but only a sort of lees formed by the intimate fusion of the different elements of the blood. The existence of the inflammatory buffy coat with such a dissolved state of the blood seems to us very remarkable.

This is all that we remarked worthy of notice in the blood drawn from the veins of persons labouring under continued fever, whether slight or severe. When observed during life, this blood did not then present any more constant alteration than the blood of those same diseases observed after death. The only three cases in which we observed the blood really altered, did not present in the symptoms any thing but what occurred in the other cases, but, further, we found similar alterations in the blood of individuals labouring under diseases totally distinct from what are called essential fevers.

Since the cases detailed in this volume were collected, we have had frequent opportunities of submitting to an attentive examination of the blood taken from the veins of persons labouring under all the varieties of essential fever. All that we ascertained is the rare occurrence of the buffy coat, and the great softness of the crassamentum. With respect to this buffy coat itself, the causes which, out of ten cases of continued fevers, produce it once, and occasion its absence nine times, do not appear to us capable of being discovered, except when there comes on a complication of pneumonia, pleuritis, or rheumatism.

Neither has M. Louis found any thing particular in the blood drawn from the veins of persons affected with typhoid fever ; as was the case with us, he found the buffy coat in only a small number of cases of blood-letting, thirteen times out of forty.

After these facts, which are sufficiently numerous to warrant us in attaching some value to them, it is with some reserve that we shall admit of other facts, observed at different periods, from which it would appear that nothing is more common than to find the blood changed in persons bled during the progress of a bad fever. We shall repeat here what we have already laid down as a consequence of those researches into the blood examined after death ; it is this, that if in these diseases there exist an alteration of the blood, it is most frequently not to be appreciated by our senses.

APPARATUS OF THE LYMPHATIC CIRCULATION.

Of the different parts which compose this apparatus, one only seemed to us to be a very frequent seat of lesion—we mean the mesenteric ganglions. Every time we found the intestine exanthematous or ulcerated, these ganglions were observed to be seriously changed. They were much larger than natural ; their tissue was red or brownish ; it was torn under the finger with the greatest ease ; and sometimes small purulent deposits were scattered through one or more ganglions.

The mesenteric ganglions, which appeared to us most constantly and most seriously altered, were those which corresponded to the portions of intestine most diseased, namely, at the termination of the small intestine, or at the cæcum. There was always a direct ratio between the intensity of the intestinal lesion and that of the lesion of the glands.

In some individuals, who died when the intestinal lesion was now proceeding towards a cure, or was already cured, there still remained some traces of the affection of the mesenteric ganglions ; they were still increased in size ; and their violet colour indicated in these bodies a residue of inflammation in its decline.

From these facts, we think we may lay it down that, in fevers, the affection of the mesenteric ganglions is consecutive on the intestinal affection, and that it is a product of the latter. There is a resemblance between the engorgement which the glands of the mesentery then undergo, and that which the lymphatic ganglions of the axilla or groin undergo, when a virus, any irritating matter whatever, comes to be deposited in the tissue of the parts whose lymphatic vessels terminate in these glands. It has been said that, like the ganglions of the axilla or groin, the glands of the mesentery became diseased only in consequence of the absorption of the irritating matter produced on the surface of the ulcerated mucous membrane. It has been added, that the mixture of this matter with the lymph and blood might be considered as the cause of several of the symptoms which characterize bad fevers. All this is possible ; but observe that, in order that the axillary or inguinal glands may be engorged, it is not necessary that the absorption of the irritating matter should have taken place; it is sufficient that any point whatever of the skin or cellular tissue, from which the lymphatics going to these glands arise, should be pricked or irritated in any way. The case may be the same for the mesenteric glands. But why does inflammation of these invariably follow intestinal irritation? Why does inflammation of the glands of the axilla or groin much less frequently follow irritation applied to the point of origin of the lymphatics, which terminate in these ganglions?

RESPIRATORY APPARATUS.

SECTION I.

LESIONS OF THIS APPARATUS OBSERVED AFTER DEATH.

THE bronchi presented nothing remarkable. We have found nothing else in them but more or less redness, similar to that seen in a great number of other cases. In several they contained a considerable quantity of mucus, sometimes colourless, sometimes reddish.

If the bronchi presented nothing worth remarking, the same cannot be said of the parenchyma of the lung. We found this structure healthy in only the smaller number of our cases. In these latter it presented at most that slight engorgement which is met in almost all dead bodies. But in many cases this engorgement was much greater. On cutting into the lung, or on pressing it between the fingers, there was observed to ooze from it a very great quantity of a liquid more or less frothy, sometimes colourless, but most frequently reddish. This engorgement was so great, that it could not be considered as a mere cadaveric effect. It was probably the first degree of pulmonary inflammation.

In others, instead of this engorgement, whether serous or sero-sanguinolent, there was more or less extensive hepatisation of the pulmonary parenchyma. This hepatisation was red in the greater number of cases, and in some cases it was grey, or mixed with commencing purulent infiltration. (Cases 1, 5, 15, 17, 22, 24, 26, 27).

On one occasion we observed gangrene of the lung; it was in one of the individuals whose lung was hepatised; but the hepatisation existed in the lower lobe, and the gangrene in the centre of the upper. This gangrene we considered merely as an accidental complication of the disease.

On two occasions small purulent abscesses were scattered through the pulmonary parenchyma; but these were cases of a peculiar nature, and those abscesses appeared to be formed consecutively to the presence of pus in the torrent of the circulation. In one of these cases there had been phlebitis, and in the other the principal disease was confluent small-pox. In three cases the lung contained tubercles.

In another case cancerous masses were scattered through the lung, and lymphatic vessels, full of matter resembling softened cancer, traversed the circumference of the lung, and entered into its substance.

Of these different lesions none belongs peculiarly to the genus of diseases now under consideration. The following, on the contrary, though having been observed in several other diseases, appeared to us to present itself more particularly in bad fevers. In this lesion the pulmonary parenchyma, having become impervious to the air, as in the case of hepatisation, presents a brown or livid red tissue, which is under the finger like a sort of pulp. In this state the lung very much resembles certain spleens remarkable for their great softness. We shall be able to form an idea of this lesion of the lung, and to see in what states of disease it supervened, by referring more particularly to cases 6, 14, 16, 21.

Only twice we found in the pleura albuminous membraniform concretions, traces of a recent pleurisy.

In some individuals the cavity of the pleuræ was filled with a red liquid resembling blood just taken from a vein. In one of these cases there was at least a pint in each pleura ; in another case the pericardium also contained some.

M. Louis has also several times met similar effusions in persons who died of the disease called by him typhoid. Neither in the cases which he reports, nor in ours, did the pleura present any thing else of a morbid nature except the effusion itself.

These sanguineous effusions seem to us so much the more deserving of being noticed, as they have been often found in the bodies of animals in whom the symptoms of adynamic fever had been produced by injecting putrid matter into their veins.

From this resumé, one may form an opinion how great the number of patients was who died having the respiratory passages affected. This affection almost always coincided with that of other parts, and particularly of the digestive tube. Sometimes, however, in persons who died with the symptoms of what is called adynamic fever, we found no other lesion but pneumonia ; and in this case it seemed to us that the commencement and origin of the disease should be placed in the pulmonary lesion. We have dwelt so long on this point in the observations we made on our particular cases, that we shall not return to it here. Sometimes, again, the pulmonary affection developed itself during convalescence, and occasioned death.

SECTION II.

LESIONS OF THE RESPIRATORY APPARATUS OBSERVED DURING LIFE.

The functional disturbances of this apparatus, in continued fevers, do not correspond in their apparent severity with the intensity and frequency of the disturbances which anatomy discovers after death. In this, more than in any other disease, the most serious alterations of the pulmonary parenchyma commence, and become developed in a manner entirely latent ; and oftentimes the disorganisation of the lung is completed before even we could have suspected it to be the seat of any lesion whatever. This is so much the more remarkable, as it is here in an acute form that the pulmonary affection is developed. We shall now pass in review the different cases which have fallen under our observation.

At the onset of the disease, it is often observed that, at the same time that the symptoms of intestinal irritation become developed, other symptoms also appear which denote the existence of an active hyperemia of the mucous membrane of the air passages. By its symptoms the seat of the disease seems to be in the gastro-pulmonary mucous membrane ; oftentimes even the signs of irritation of the bronchial mucous membrane are the least equivocal. The patients cough ; they expectorate a transparent mucus, in which some striæ of blood are occasionally observed ; they complain of a painful sensation within the chest ; some say that they feel a burning or tearing all along the sternum ; others complain of pains which proceed from different points of the thoracic parietes, or are confined to one point of these parietes ; some have even more or less pain in respiring, and they evidently labour under some oppression.

If with such a group of symptoms, the chest be percussed, the sonorousness of its parietes is most frequently found to have undergone no change. If auscultation be employed, sometimes nothing unusual is discovered, the respiratory murmur is everywhere pure as in the normal state; it is sometimes louder; and as we have stated elsewhere, there is then reason to apprehend that some of the pulmonary lobules have become impervious to air. Sometimes different râles are heard, which indicate either the existence of a certain quantity of mucus in the bronchi, or a slight engorgement of the mucous membrane of the tubes.

These different symptoms often exist only during the first days of the disease; they are observed to disappear either spontaneously, or after a blood-letting, and sometimes after a vomit; and the disease then seems to become more and more concentrated in the digestive tube. At other times these symptoms continue, without becoming worse, during the entire course of the disease. At other times they become worse; the irritation of the pulmonary mucous membrane extends to the parenchyma of the organ, and all the signs of pneumonia appear.

But it is not in this way that the pneumonia which complicates continued fever most usually sets in. Frequently it supervenes at a period much more remote from their outset, and in persons who, till then, had not presented any trace of pulmonary lesion, either in the rational signs, or by means of auscultation.

Two cases may then present themselves: in one the pneumonia is announced by its characteristic symptoms; in the other it remains latent, and auscultation or percussion alone can detect its existence. When the former occurs, the patients after having had some shivering, or without that symptom, are seized with cough, stitches in the side, rust-coloured sputa, &c.; they present in each of these symptoms numerous varieties already noticed in another part of this work, under the head of *diseases of the chest.*

The second case may present itself at a period when the patients are far from having fallen into the adynamic state; but most usually the pneumonia remains completely latent only when it attacks an individual already sunk in the adynamic state, or in whom there exist different nervous symptoms, more or less alarming. It is principally in such cases that instead of simple engorgement, or the ordinary red or grey hepatisation, we find the brown or livid softening, of which we have spoken above.

How frequently have we not in such cases found a considerable portion of the pulmonary parenchyma become impervious to air in persons who, during life, had not manifested any appreciable difficulty in their breathing, who had had no cough, and in whom the sputa were either altogether absent, or merely mucous! It is then of the utmost importance frequently to percuss and auscultate individuals labouring under bad fevers, however exempt they may appear to be from any affection of the respiratory apparatus.

Without being indicated by any of its ordinary local symptoms, the pneumonia of bad fevers may produce general symptoms of a very remarkable kind. Thus at the same time that auscultation apprises us of its invasion, we observe considerable increase in the prostration of the patient; suddenly the pulse becomes much more frequent, and often extremely feeble, though at other times it acquires some hardness; the features become altered, and the cheek bones (pommettes) present a redness which forms a striking contrast with the livid paleness of the rest of the face.

The pneumonia, which comes on during convalescence, is most usually indicated by symptoms which do not allow us to mistake it; we shall, not, therefore, dwell on it here. But we shall call attention for a moment to another case, which we have sometimes met. Several convalescents complain of a cough which, at first, seems devoid of any importance; still this cough persists; the fever which had entirely disappeared, re-appears under another form; every evening there is an acceleration of the pulse, and some heat of skin, and in a little time this febrile accession is terminated every morning by sweats. The strength which had at first appeared to return, diminishes more and more; and at the end of some time, there can no longer be any doubt of the existence of pulmonary phthisis. On going back to the previous history of such cases, we find that in some there had been, before their last illness, divers symptoms which might cause one to apprehend the development of tubercles in them. But in others nothing of this kind had existed, and it is for the first time during their convalescence, that they present some symptoms of tuberculisation of the lung.

In all that has been now said, we have spoken of the affection of the respiratory apparatus only as a complication of fever; but there are other cases wherein this affection appears to be the origin of it. This is what is observed principally in old persons; when a pneumonia attacks them, it is scarcely indicated by its ordinary symptoms, when at times the tongue becomes dry and black the intelligence is disturbed; we observe, in a word, all the phenomena which characterise what is called adynamic fever; then the sputa may be suppressed, the oppression may be slight, and the cough inconsiderable. Without percussion and auscultation, the pulmonary affection is still overlooked, or lost sight of; and it is only by post mortem examination that all its severity can be appreciated. In no place else is there any lesion detected; and it then seems quite natural to refer the adynamic symptoms presented by the individual to the disease of the lung.

Whilst in a considerable number of individuals, labouring under bad fevers, no local symptom discloses the existence of the most intense pulmonary lesions, there are other persons in whom there is observed a very marked disturbance of the respiration, without any disease of the lung being found after death. Whilst this organ remains perfectly healthy to the eye of the anatomist, the breathing is observed to be hurried, short, difficult, or extremely irregular; thus some patients are observed, in whom, within a short space of time, the respiratory movements present alternately extreme frequency, and then considerable infrequency. These different modifications of the respiration are obviously the result of the disturbance of the innervation. Why should not disturbance of the nervous centres occasion an irregular contraction of the inspiratory or expiratory muscles, just as it occasions the most unusual movements in the muscles of relative life?

APPARATUS OF THE SECRETIONS.

SECTION I.

LESIONS OF THE CELLULAR TISSUE.

THIS tissue is but seldom found altered. The few lesions which we have met in it are the following:—

1st. Effusions of blood. Thus, in two cases, a perceptible quantity of blood infiltrated the cellular tissue placed between the fibres of the recti muscles of the abdomen.

2ndly. Collections of pus. Sometimes they were formed during the course of the disease, and seemed to have but little influence on its termination; sometimes the period of their appearance coincided with that of a general improvement of the symptoms. Another time numerous abscesses which presented themselves also coincided at first with the establishment of convalescence. But one of these abscesses did not close, and there came from it a profuse suppuration which occasioned death.

In one of our cases of small pox, complicated with typhoid symptoms, there were abscesses in the cellular tissue of the neck; they seemed to be metastatic, similar to those which were scattered through the lung in the same individual.

In two of our cases the inflammation of the cellular tissue, which terminated in simple suppuration in one case, and in gangrene in the other, appeared at the commencement of the disease, and may be considered as its very origin; at least, on opening the bodies, nothing was found but this phlegmon, to explain the adynamic fever.

3rdly. Serous infiltrations. These have been observed in some convalescents; they were confined to the parts around the ankles, and disappeared spontaneously after some days.

In a woman, whose case is not contained in this work, we observed during convalescence from a bad fever, considerable serous infiltration in all the left lower extremity. This infiltration, which set in rapidly, followed the appearance of extremely acute pains seated on the left iliac region. These pains we combatted by the application of leeches; they lasted for eight days, and then disappeared. The œdema of the limb disappeared soon after. In this case we could only form conjectures regarding the cause of these pains, and the œdema which followed them.

SECTION II.

LESIONS OF THE SEROUS MEMBRANES.

We have already spoken of red effusions formed of blood, found occasionally in the pleura, in the pericardium, and in the peritoneum. They exist without the tissue, whence the blood comes, presenting any appreciable alteration, and it would be only by an hypothesis that one could refer to an inflammatory process those sanguineous effusions, which oftentimes appear to be much less connected with any lesion of that part of the system where they occur, than with certain conditions of the blood. Accordingly, these effusions are produced in animals, who receive into their veins certain putrid substances; or the latter produced such an alteration in the blood as to prevent its coagulation after death; such effusions are found to occur in scorbutic individuals.

Inflammation, properly so called, of serous membranes, is a very rare phenomenon in fevers. Thus, in these affections, the pleura is found much less frequently changed than the lung; and the peritoneum, though in almost immediate contact with the mucous membrane, which is nearly always very seriously changed, generally remains intact, except in the cases wherein one of the ulcers of the intestine happens to perforate it. The result of this is one or other of those varieties of peritonitis already noticed.

SECTION III.

LESIONS OF THE BILIARY APPARATUS.

In our experience, the liver was almost invariably found to be healthy. In a few cases its tissue was found to be extremely dense; but that was a lesion purely accidental, which in all probability had no connexion with the disease of which the patients died. On one occasion the liver was found to be extremely pale. In no case did we observe it to present lesions connected with those of the digestive tube.

In these different cases the principal alteration resided in the digestive tube; but we met another case wherein the typhoid symptoms did not coincide with any other alteration except red softening of the liver. In the morbid state of this organ the original cause of the symptoms appeared to lie here.

Neither have we seen that, in M. Bouillaud's observations on fever, the liver presented any thing remarkable, except in one case, wherein this organ contained several abscesses. It was in an individual who, after having presented for several days a jaundice tint with pains towards the right hypochondrium, diarrhœa, red tongue, great anxiety, alternations of heat and cold, meteorism, hiccup, delirium towards the termination, etc., was suddenly seized with hematemesis, after which he died.

In the part of our Clinique dedicated to the consideration of diseases of the liver, we shall find a case of abscess of this organ, announced by no other symptoms than a febrile disturbance, without any organ appearing to be the seat of any especial lesion.

In the facts recorded by M. Louis, we find no abscess of the liver, neither do we find any instance of lesion of this organ, to which the name of hepatitis can be given. But M. Louis states that he met in several individuals affected with typhoid fever, a very particular state of the liver, in which this organ, at the same time that it contained very little blood, and that a section of it was observed to be dry, had become so friable, that the slightest pressure with the finger was sufficient to reduce it to a pulp. M. Louis assigns no symptom to this state, of the nature of which he acknowledges himself ignorant; he states that he met it in other persons besides those labouring under typhoid fever, less frequently, however, than in the latter.

We observed nothing similar in the cases contained in this part of the work; but it is possible that at the time they were taken this lesion may have escaped us. Since we became acquainted with the researches of M. Louis, we have endeavoured to ascertain the existence of softening of the liver in typhoid fever, and we have not observed that this softening was more frequent in this disease than in others. In other cases we found a softening similar to that mentioned by M. Louis; it was observed in its highest degree in two women who died of puerperal peritonitis, with purulent depositions in the body of the uterus, but without any trace of pus in the veins.

We have never met any morbid change in the gall bladder. With respect to the bile we have often seen it changed in its quantity, and sometimes in its qualities.

Thus, in a considerable number of dead bodies, we have found the duodenum and upper portion of the jejunum and ileum filled with a great quantity of bile; we very seldom discovered any in the stomach. Beneath it the mucous membrane presented to us three different aspects: it sometimes had a yellow tint, which the bile had given to it since death; it was sometimes of a more or less intense red, whilst on some occasions it was perfectly white.

Nothing was more variable than the state of the bile contained in the gall bladder; and of the different appearances which it presented to us, none was observed to us more frequent in continued fevers than in any other disease. Thus it oftentimes had a deep black tint, a very great viscidity, and a syrupy consistence. At other times, on the contrary, the gall bladder contained a clear and almost colourless liquid resembling serum.

On one occasion we found in the gall bladder and in the excretory ducts a liquid not at all resembling bile: it was a sort of sanious matter, somewhat like the ichorous discharge of certain ulcers.

We only once met a calculus in the gall bladder.

If we now inquire what functional disturbances the liver and its appendages presented to us during life, we shall find them to be very few. We never detected any pain in the right hypochondrium which we could consider as appertaining to the liver. The bilious vomiting and purging appeared to us to be connected rather with a morbid state of the digestive passages than with any lesion of the liver. We have opened the bodies of persons who died at that state of the disease when the different symptoms of what is called bilious fever existed: the liver presented nothing remarkable, neither was there any considerable quantity of bile in the primæ viæ.

In the individual in whose liver M. Bouillaud found abscesses, the skin had presented an icteric tint; but it should not be inferred from this that we shall find the liver appreciably changed in all individuals who, during the progress of a bad fever, may happen to present a yellow colour of the skin. Thus, one of the circumstances which may present it, without our finding any lesion of the liver after death, is the presence of pus in the venous system; and in this case it seems evident that this yellow tint is owing not to bile, but to a particular alteration which the blood has undergone in the capillaries, in consequence of its admixture with pus.

But jaundice may present itself as one of the phenomena of bad fevers without the presence of pus in the blood, and always without any appreciable alteration of the liver. An individual died in the Charité, September 1828, with all the symptoms of what is called adynamic fever. During the two last days of his life, the entire skin assumed a well-marked icteric colour. On opening the body no particular lesion accounted for this jaundice; there was nothing remarkable in the liver, nor in its excretory ducts; in the intestine the ordinary exantheme was found in the stage of ulceration.

The appearance of jaundice in bad fevers coincides sometimes with profuse hemorrhages, either from the nasal fossæ, or the mucous membrane of the stomach or intestines; and in this case again observation has shown that it is not to an alteration of the liver, appreciable at least by anatomy, that the jaundice can be attributed. Thus, for instance, neither the liver nor bile ducts presented any thing particular in an individual whose case has been reported by Desmoulins*. This person, who fell sick at Havre on coming from Martinique, presented the following symptoms:

On the first and second day, he had intense headach, delirium, and extreme restlessness, so that it became necessary to employ the straight-waistcoat; blindness at intervals; hiccup; hemorrhage from the nasal fossæ, mouth and anus; ecchymosis on different points of the skin; his perspiration dyed his linen yellow.

On the third day there was general jaundice; black vomiting; total blindness; coma, with convulsions of the extremities and face; carphology. He died on the fifth day.

The same black pitchy matter was found in the digestive tube, as had been passed during life both by vomiting and stool. The gastro-intestinal mucous membrane was of a brown red colour. *There was nothing remarkable either in the liver or in its appendages.* The skin contained a considerable quantity of blood, and poured it out in jets, when an incision was made into it.

Another remarkable circumstance in this case, and one probably connected both with the hemorrhages from the mucous membrane and with the jaundice, is, that the body, which was opened whilst still warm, five or six hours after death, already presented well-marked emphysema of the sub-cutaneous cellular tissue.

---

* Journal Complementaire des Sciences Médicales, tom. 12.

Might not one be inclined to admit that in these different cases the yellow colouring of the skin is principally owing to the blood, which at the same time that it escapes from the surface of the mucous membrane, also leaves its vessels on the surface of the skin, either in some detached points, which gives rise to partial ecchymosis, or over the entire surface, which occasions general ecchymosis, and imparts to the entire cutaneous envelope a yellow tinge?

SECTION IV.

LESIONS OF THE URINARY PASSAGES.

The urinary passages are more rarely found the seat of lesion than any other organ of the body. In two or three cases the mucous membrane of the bladder appeared to us to be very much injected. We have found it white in more than one case, where, during life, there had been retention of urine and long continued distension of this viscus.

In two cases only were the urinary passages the seat of very serious lesion, which appeared to us to have acted an important part in the production of the symptoms.

In one of these cases one of the kidneys was very red and extremely friable; there was pus in the ureters, and the vesical mucous membrane was intensely red; all the other organs were found healthy, and it appeared to us that the well-marked adynamic fever which had taken place, might be considered as having had its origin and cause in the affection of the urinary apparatus.

In the other case the prostrate was the seat of an immense abscess; and here again this lesion was the only one of any importance detected on opening the body. The urine contained in the bladder, when examined after death, presented nothing particular. The urine passed by the patients during life was not examined by us with sufficient care to enable us either to deny or confirm what has been stated by authors concerning the qualities of the urine in the different stages of fever.

SECTION V.

LESIONS OF THE SALIVARY GLANDS AND OF THE PANCREAS.

The maxillary and sublingual glands presented nothing particular in any of our cases. Such, however, was not the case with the parotid glands, and particularly with the cellular tissue surrounding these glands.

Five times only have we observed any considerable tumefaction in the parotid region. In these five cases this tumefaction occurred in individuals who had had the symptoms of ataxo-adynamic fever in an extreme degree. In none of these cases could we consider the parotid engorgement as critical; it appeared to us to be merely an accidental, though dangerous complication of the disease, or one which retarded convalescence when the parotid became enlarged only at this latter period.

Thus in one of these cases the very day on which the enlargement of the parotid appeared, the thirteenth day of the disease, the symptoms became worse:

the gland increased in size on the following days, and each day also the symptoms became exasperated.

In one of our cases the parotid gland became enlarged on the nineteenth day, and attained all at once an enormous size. The patient died two days after.

In another case we could not determine with precision the time when the enlargement appeared; the tumefaction was but slight. After having remained stationary for three days, the tumour gradually diminished, and disappeared without having exercised any influence on the disease. This case terminated fatally.

In another case the parotid became prominent towards the twentieth day, when the patient was nearly convalescent. According as the parotid enlarged, the fever was rekindled, and adynamic symptoms re-appeared. The tumour declined towards the tenth day, and we observed the bad symptoms again disappear, according as the tumour tended towards resolution.

In another case also, it was a little time before the establishment of convalescence, one of the parotids became swollen. This engorgement was treated like any other inflammation: leeches were applied to the tumour, and it was covered with emollient poultices; it lasted for seven days, and terminated in resolution. Convalescence was not perfectly established till after the disappearance of the parotid enlargement. This tumefaction having come on in an individual who was already exhausted by a very severe disease would, in all probability, have terminated fatally, if, instead of meeting it from the very instant of its appearance by the active treatment usual in every inflammation, it had been allowed to suppurate, for fear of disturbing what has been called a critical movement of nature.

When a parotid tumour terminates in suppuration, it is necessary to give exit at an early period by a proper incision to the pus which has formed between the granulations of the gland; for this pus, by spreading to the neighbouring parts, may give rise to serious consequences. On two occasions we saw the cartilaginous portion of the meatus auditorius destroyed, by the pus being allowed to remain, and the abscess of the parotid discharge itself through the ear.

The pancreas, which so closely resembles the salivary glands in its texture, is not more frequently affected in fevers than in other diseases. Once, however, we found it more injected than usual. This injection was principally seated in the cellular tissue interposed between the lobules of the gland. This slight lesion coincided with tumefaction of one of the parotid glands.

ORGANS OF THE LIFE OF RELATION.

SECTION I.

LESIONS OF THOSE ORGANS OBSERVED AFTER DEATH.

A.—*Nervous Centres.*

There are few organs, in persons affected with continued fevers, which present more functional disturbances than the nervous centres; there are few, however, which, after death, present fewer lesions appreciable by dissection; and if there be any truth clearly established to our satisfaction, it is this: that in what are called essential fevers, there is no nervous symptom which may not present itself without any appreciable alteration in the brain or its appendages.

With the exception of six individuals (cases 9, 15, 23, 26, 27, 37), all those whose bodies we opened had had delirium, or other well-marked disturbances of the nervous functions, at the time they died, and in almost all these disturbances of the innervation existed for a considerable time. The following is the state in which the nervous centres, or their appendages, were found :—

The sinuses and venous trunks which surround the encephalic mass were found gorged with blood in only a very small number of cases. In the individuals who form the subject of these cases the symptoms of what is called ataxic fever had predominated.

In some cases the membranes presented different degrees of injection. This injection coincided on two occasions with death, which was preceded by great embarrassment in respiration, and in these two cases it might be considered as entirely mechanical. Most frequently it existed in only a slight degree. In one case it was very considerable, but appeared only in some points. In all it had its seat almost exclusively in the sub-arachnoid cellular tissue of the convexity of the cerebral hemispheres. In one of the individuals whose membranes were injected, the arachnoid of the convexity of the hemispheres was unusually friable. In some the subarachnoid cellular tissue was infiltrated with a quantity of limpid serum, but this quantity was never considerable.

In some others we also found a little serum, either within the ventricles (never more than three or four small spoonsful in each, and most frequently scarcely one), or at the base of the cranium.

In no case was the serum which we found in the sub-arachnoid cellular tissue, in the ventricles, or at the base of the cranium, in sufficient quantity perceptibly to raise the arachnoid, separate the convolutions, or occupy any considerable portion of the occipital fossæ. Thus, these effusions being but inconsiderable, though still deserving of notice, do not appear to us of such importance as to warrant us in taking them into consideration for the purpose of explaining the symptoms.

The consistence of the brain appeared to us perceptibly diminished in only one case. On raising the arachnoid, which was red and friable, we brought with it portions of the substance of the convolutions. The softening was confined, moreover, to the most superficial layer of the latter.

There was also general softening of the brain in the individual whose case has been reported by M. Gauthier, and of which we have spoken in the remarks which follow our forty-seventh case. But in that case this softening coincided with diminished consistence in several of the other tissues.

We have found perceptible increase in the consistence of the brain in only one case. This unusual firmness coincided with considerable injection of the membranes. Stupor had been the prevailing phenomenon during life.

Whenever the nature of the symptoms induced us to examine the spinal cord, we detected nothing remarkable in it.

Such are the rare, and for the most part very slight alterations, which, being found in the brain, might be considered as of recent formation.

In some other cases we met more serious alterations in the brain or around it, but such as had no connexion with the disease of which the patient died; thus in one individual there was an old apoplectic clot (foyer) ; in another a bony granulation was implanted in a part of the cerebral substance. In a third a false membrane of a fibrous appearance was placed between the arachnoid and dura mater on the one hand ; between the arachnoid and pia mater on the other.

We have also made mention of some individuals in whom small purulent depositions were scattered through the encephalic mass, and who had died with typhoid symptoms. But in them there were at the same time abscesses in twenty other parts of the system, they were connected either with phlebitis, or purulent absorption ; this was the cause of all the symptoms, and the brain, in such cases, presented no particular functional disturbance.

Did the individuals who presented the different states of the brain now passed in review, present any thing particular in the symptoms? by no means. Nervous symptoms of the same nature, of the same intensity, and of the same duration were observed, both in those whose brain or its appendages seemed to present something no longer normal, as also in those the integrity of whose nervous centres had undergone no species of appreciable alteration.

But, further, it is far from being true that it is in bad fevers only that we meet engorgement of the sinuses, injection of the membranes, effusion of serum in different parts of the cavity of the arachnoid, or outside this cavity, red points in the cerebral substance, numerous shades in its consistence, etc. All these states we have also met in many other cases where, during life, no nervous disturbance had been observed ; so that in the cases, where one of these states coincides with some disturbance of the innervation, we may reasonably doubt whether this state has been the cause of the functional disturbance.

The nervous centres of organic life were examined by us in a considerable number of cases ; twice only did they present any appearance of alteration : it was in the case of two individuals who died with a group of well-marked adynamic symptoms ; the semilunar ganglions were remarkably red. One of these individuals had experienced during the last forty-eight hours of his existence violent trismus and tetanic rigidity of the upper extremities. We would not venture to assert that in these cases the redness of the semilunar ganglions was a morbid state ; for repeated researches have taught us that these ganglions are very variable in colour, a circumstance depending on the kind of death and the quantity of blood contained in the different capillaries.

Thus it may be laid down that, in fevers called essential, the state of the nervous centres after death cannot account for the disturbances which they presented during life [*].

Are the functional disturbances of the nervous centres, in these fevers, the uniform sympathetic result of a morbid state of the stomach? This cannot be admitted ; for in the majority of cases we have found no constant connexion between the state of the stomach and the lesion of the nervous functions ; we have already stated, that this organ was found perfectly healthy after death in many persons, who up to the last moments of life had had nervous symptoms of the most serious and varied description. No doubt, however, but these symptoms may be the sympathetic effect of a gastric irritation ; but all we wish to lay down here, which also results from the researches of M. Louis, is, that this irritation is not necessarily the original cause of the nervous disturbances which come on in bad fevers, and even that in most cases these disturbances cannot be explained by the state in which the stomach is found after death.

May we refer the nervous disturbances in bad fevers to the state of the small intestine, and particularly to dothinenterite? Certainly we may in a great number of cases, but not in all. In several of these cases, where, in order to account for the very severe symptoms, nothing is found but some follicular patches swollen, or slightly ulcerated, there is some ground for hesitating to refer such great disturbance to such slight lesions ; there is reason for thinking that behind these visible lesions, and before their appearance, there existed in the previous state of the patient some serious derangement, without which such alarming symptoms would not have been produced. No, the intestinal affection is not the entire cause in all such cases, and in order to account for every thing which coincides with it, or appears after it, it becomes necessary to introduce other

[*] This opinion is further confirmed by the recent observations of M. Louis. In his *Traité de la Fiévre typhoide* (tom. ii. pag. 154), this gentleman says : " The apparent state of the brain could not explain the symptoms of which it had been the source, just as the state of the mucous membrane of the stomach does not account for the loss of appetite and other gastric symptoms in a great number of cases."

elements, which pathological anatomy has not yet discovered by means of the scalpel. Here then, as in numberless other cases, that which we perceive is but a part of that which exists.

And, moreover, has not our experience pointed out to us other cases where, in the absence of all trace of dothinenterite, these same nervous symptoms were observed? Has it not shown us cases where these same symptoms were still found in the absence of all species of intestinal lesion appreciable by anatomy, but with lesions of other organs? We cannot forget those uncommon, but yet real cases, in which, in the absence of any organic lesion appreciable after death, the same nervous symptoms were still present. Refer, for instance, to the individual who forms the subject of our twenty-fifth case:—When convalescent from a dothinenterite, a moral excitement acted on him; he all at once presented symptoms which indicated considerable disturbance of innervation. He died in a few days; and anatomy discovered, neither in the nervous centres nor elsewhere, any lesion to account for the alarming phenomena which hurried him to the grave.

B.—*The Muscles.*

It has been frequently stated, that the muscles of individuals labouring under adynamic fever presented to the touch a pitchy (poisseux) feel, which characterised diseases of this kind. We feel warranted in asserting that, in a considerable number of cases, we did not discover this state of the muscles; and that, on the other hand, we have observed it on the bodies of persons who died of different acute diseases.

If the great development of the muscles uniformly indicated the amount of vital energy possessed by each individual, we could not believe in the existence of a real adynamic state in several individuals who died with all the symptoms of the greatest prostration. In such cases we found the muscles remarkable for their size, their firmness, and their great redness. How are we to explain the singular softening which the entire muscular system presented in the individual alluded to in the observations following our forty-seventh case?

SECTION II.

LESIONS OF THE ORGANS OF RELATIVE LIFE OBSERVED DURING LIFE.

A.—*Lesions of the Functions of the Nervous Centres.*

These centres, observed at the different stages of the disease, present to us disturbances in their functions as frequent as the lesions which they present after death are uncommon. We shall recapitulate whatever these functional disturbances have presented most remarkable at the onset of the disease, or during its progress.

At its onset the disease may assume one of the following forms:—

First Form.—Apyretic disturbance of the digestive functions (anorexia or diarrhœa), without the appearance of any functional disturbance of the nervous centres.

Second Form.—Apyretic disturbance of the digestive functions, with slight nervous symptoms, such as headach, tinnitus aurium, swooning, pains in the region of the kidneys, spontaneous lassitude, pains in the limbs, and principally towards the articulations, a feeling of debility.

Third Form.—Febrile disturbance of the digestive functions, with the same nervous symptoms.

Fourth Form.—Absence of any disturbance of the digestive functions, or at most a diminution of appetite. The same nervous symptoms, without fever.

One or other of these symptoms may predominate more particularly.

Thus, in a great number of individuals, there is observed at first a pain of head, which is often very acute, and which lasts for several days without being accompanied by any other symptom.

In others the commencement is particularly marked by lipothymia and dazzling (eblouissemens).

Some individuals experience, before any other symptom, pains in the joints, which sometimes may be mistaken for a rheumatic affection.

Some patients feel, in the first instance, a degree of debility which astonishes them, without having any fever, and without their appetite being much diminished. They are fatigued, they say, after walking only a few steps ; every sort of exertion is painful to them ; they become altogether listless, and are content only when in the most absolute state of rest.

Fifth Form.—The same nervous symptoms, with fever, and without any apparent disturbance of the digestive passages.

Sixth Form.—Severe nervous symptoms from the very onset, such as delirium, stupor, coma*.

This form of commencement is the most uncommon of all.

If we now trace the nervous symptoms in the course of the disease, we shall find them sometimes very slight, but always present ; sometimes more severe, and then constituting bad fevers. For every fever becomes such only in consequence of the part which the nervous system takes in it ; and by no means, and this cannot be too often repeated, in consequence of the existence of such or such an organic lesion, nor of an affection of the intestinal follicles, more than of any other organ†.

---

* One of the most remarkable cases of this description which we have met is the following:—A medical student, who had been four years residing in Paris, complained, for the last eight days, of slight irritation of the digestive passages, for which he did not even take to his bed, when, on the evening of the 24th of November, 1833, he was suddenly seized with violent delirium. The next morning, the 25th, he was bled to the extent of sixteen ounces, without any improvement. On this day, at two o'clock in the afternoon, we found him in the following state : face red, eyes sparkling, great agitation, complete delirium, loud cries. The patient springs out of his bed, in which several friends of his were not able to keep him. It became necessary to tie him ; at the same time his pulse was very frequent and full, skin hot, tongue red and gluey. The patient was immediately removed to the Pitié, where, by my directions, forty leeches were applied to the mastoid processes. They abstracted a considerable quantity of blood. At night the patient fell into a state of great debility, and all his body was covered with a cold perspiration. However, towards midnight his strength rallied ; he again became very restless, and rose up several times, and wished to leave his bed. On the morning of the 25th of December he was more calm, but the delirium still continued ; cheeks flushed, whilst the rest of the face was of a yellowish tint ; tongue dry and red ; abdomen slightly tympanitic ; pulse 112. I directed a bladder full of ice to be applied to the head, and the lower extremities to be covered with sinapisms. Whilst the ice was kept to the head the patient continued very calm ; he then fell into a sort of stupor for about two hours, and, when come out of it, he had his reason perfectly restored. On the following morning, the 27th, his intellects were clear, and the pulse was not more than 76. At night a little delirium again returned, with some fever ; the ice was again applied to the head. The patient asked for it himself, because he felt that it calmed him. On the following days all trace of delirium disappeared ; but the febrile disturbance continued, and the different signs which characterise dothinenterite were observed. They ceased gradually ; and the patient left the hospital perfectly recovered on the 10th of January, 1834.

† There is one remark to be made here ; namely, that even slight irritations of the digestive tube react more readily on the innervation than the irritation of any other organ. See, for instance, what happens to a person who has excited his stomach by either too much food, or by food of too stimulating a nature ; general illness, extraordinary depression, a feeling of debility and fatigue, of pain of head, or, at least, a sense of weight in the head, total unfitness for intellectual exertion ; such are the effects. Certainly, such phenomena are observed much

We have carefully studied, in our several cases, the infinitely varying forms of the disturbance of the intelligence. Sometimes this disturbance is suddenly carried to an extreme degree; sometimes it is established only gradually; the patients still understand every thing that is said to them, and answer questions with accuracy; but they have a look of astonishment; they from time to time pronounce some words without meaning, or they can scarcely recollect what happened to them a few minutes before; others make short and abrupt answers, and sometimes answer slowly and vaguely; they seem to endeavour to ascertain what is asked of them, and to require a great effort of mind to answer the most simple question. After a little time no answers are returned, unless the question be repeated several times; and ultimately no answer whatever can be obtained. Yet, though they no longer answer, they oftentimes still comprehend what is said to them; they give the arm, or put out the tongue, when bid to do so. In this state, they sometimes observe the most profound silence, their intellects appear gone, or else the expression of the countenance seems to indicate that the patient's mind is attentively pre-occupied with some particular thought. Sometimes, instead of this silence, they are very talkative; sometimes, again, they utter loud cries, and are continually vociferating. Some exhibit a calm, indifferent air; others manifest, by their countenance, the expression of the most intense anxiety, or most profound despair. They become very much discouraged, and consider themselves doomed to inevitable death. In others, on the contrary, the first indication of any disturbance of the intelligence is the persuasion which they feel that they are very well, that they are becoming better and better, according as their disease is becoming worse.

This delirium, whatever be its form, is oftentimes continued from its commencement. At other times it is observed to be only transient; at other times again, it returns periodically every night.

Instead of these various disturbances of the intellect, some patients present, from an early period of the disease, a remarkable tendency to sleep, as the prevailing phenomenon; as soon as they are left to themselves, they close their eyes, and seem to sleep; and in a little time they can be no longer roused from this state of somnolence, which is changed more or less rapidly into a real coma. Sometimes this latter symptom is continued; sometimes it alternates with a state of exaltation, during which the patient presents one of the varieties of delirium already noticed.

In several cases, we observe extraordinary and rapid alternations of coma, delirium, and perfect clearness of the intelligence.

B.—*Lesions of Muscular Action.*

Disturbance of muscular action often accompanies disturbance of the intelligence; it may precede it, or appear simultaneously with it. In some of our patients we have observed, before there was any trace of delirium, or somnolence, the muscles of the face agitated with small convulsive movements, principally seated towards one or other of the commissures of the lips. In others, the predominant phenomenon was a very marked tremor of the extremities. In some, subsultus tendinum was, as it were, the prelude to the other nervous symptoms. The subject of case twenty-five presented, at the period of his relapse, permanent flexion of the fingers, as the first indication of the disturbance of the nervous centres. In one of our cases there were the symptoms of catalepsy; in case twenty-eight, a well-marked trismus; in another case, tetanic shocks over the body; in case

---

less frequently under the influence of a bronchitis, or such other organic irritation. It seems to be peculiar to gastro-intestinal irritation to disturb the innervation; whilst in the affections of other organs there is required, on the part of the nervous system, a greater predisposition, in order that it may be involved.

twenty-nine, a spasmodic contraction of the muscles of the pharynx, and some of the symptoms of hydrophobia; in case seven, a modification in the contractions of the diaphragm, the consequence of which was a very distressing hiccup, which required to be met by peculiar treatment.

Muscular action, instead of being exalted, appears oftentimes more or less completely abolished. Then the contractions of the muscles are observed to become weaker and weaker, and also extremely uncertain; the tongue, as it were, trembles, and its movements seem to be withdrawn from the influence of the will. At a more advanced stage, the patients, lying on their back perfectly motionless, their arms fixed along the trunk, the eye extinct, countenance dull, intelligence in a manner gone, skin cold, pulse thready, give no other indications of life than by some inspiratory movements, which are repeated at long intervals. This state, which resembles the last struggle, may, however, be followed by a return to health.

In more than one case, the muscular strength seemed completely lost; and where it appeared that motion was now become impossible, we have seen patients exert all at once, in the midst of their delirium, a degree of energy which we could not have suspected them capable of; these same patients, who, a few minutes before, fell back as inert masses, when an effort was made to raise them, suddenly sat up, arose, left their bed, and walked about. Others, who, during the day, appeared to be sunk in the last degree of prostration, uttered, however, the most violent cries during the night, and required to be tied, in order to confine them to the bed.

In these different cases the term *debility*, as well as the term *excitement*, should be employed with considerable reserve; for neither of them faithfully represents that which exists; and as the greater number of the organic lesions observed can no more be explained by excess, than by deficiency of the normal excitement, in the same manner we must not have recourse either to strength or debility for the purpose of explaining the great modifications of the innervation, which are the most prominent phenomena of bad fevers, and are, as it were, their symptomatic character. By eternally adhering to this dichotomy, and taking alternately, as the expression of truth, sometimes the former and sometimes the latter of these terms, persons have certainly gone beyond that which was supported by facts, not seeing that the sthenic as well as the asthenic state was equally based on hypothesis, and that it would have been wiser and more profitable for science as well as for humanity, to recognise in these great disturbances of functions a state of modification, or of perversion of the nervous power, which therapeutics should no more attempt to meet by tonics, than by debilitants; their only end should be to produce in the system a series of organic movements, which may have the effect (an effect, by the way, never certain, but still possible) of bringing back the nervous functions to their normal state.

Was there excess of strength, or excess of debility, in those remarkable cases of sudden death, which occurred in several of our patients at a time when no serious symptoms had as yet appeared (cases 6, 8, 11, 23, 31)? Who does not see that the dichotomy of Brown, as also the theory of Broussais, are altogether insufficient to account for the phenomenon? Who does not see that in this, as well as in many other modifications of the innervation, there is something else besides this sthenic and asthenic state, to which it would be more convenient to refer every thing?

C.—*Lesions of the Functions of the Organs of the Senses.*

A considerable number of our patients evinced great diminution in the faculty of hearing. This sometimes manifested itself only at a very advanced period of the disease; sometimes it preceded the ataxo-adynamic symptoms, and led us to predict their development. This second case is far from being uncommon:

under such circumstances, the countenance ordinarily assumes a peculiar expression of stupor. On one occasion the air of stupor disappeared all at once, at the time when the ataxo-adynamic symptoms had attained their maximum of intensity.

The sense of vision has also undergone some modifications. It was altogether lost in some instances; in others, fantastical objects presented themselves to the patients. The pupils were oftentimes observed to be either very much contracted or dilated, either on both sides at once, or only on one side. The globe of the eye was occasionally observed to deviate from its axis, sometimes towards the inner, sometimes to the outer side.

In such of these cases as terminated fatally, we detected no lesion of the nervous centres, which could account for those different modifications of the senses of hearing and vision.

The sense of smell presented nothing particular. But the mucous membrane in which this sense resides, has often been the seat of a hemorrhage which, by its frequency and connexions with other symptoms, merits some consideration. There is no disease in which attacks of epistaxis has been so frequently observed. Epistaxis occurs at three different stages of bad fevers: first, at their onset; secondly, during their progress; thirdly, towards their termination.

At the onset the epistaxis is often connected with headach and all the signs of cerebral congestion; at other times it comes on without these signs existing.

During the progress of the disease it coincides in some individuals with intense redness of the face, injection of the eyes, dizziness, a full, rebounding pulse, and with that group of symptoms which constitute inflammatory fever. But in other cases such is not the case; it is observed to occur at the time when the signs of the adynamic state are setting in; oftentimes, too, it is the precursor of them, and according as it is repeated, the prostration goes on increasing, as also the paleness of the face, the stupor, disturbance of the intelligence, subsultus tendinum, etc. More than once have we seen it, in such circumstances, manifest itself after copious blood-letting, and return again according as the latter operation was repeated. We have also observed it to coincide with other hemorrhages from mucous membranes, or with the development of more or less petechiæ. In several of these cases the occurrence of one or more attacks of epistaxis appeared to us to mark very distinctly the transition of a continued fever, which till then was rather mild (bilious or inflammatory), to a much more alarming form (ataxic or adynamic).

Again, in some instances, epistaxis was accompanied with a visible improvement in the symptoms; it is in such cases that it has been considered critical. In one of our cases, the nasal hemorrhage, whose appearance had coincided with a visible amendment in the disease, afterwards threatened to prove fatal by its great profusion. It ceased on the employment of tonics.

There are some of these cases of epistaxis whose profuseness increases in the direct ratio of the debility of the patients and of their state of anœmia. Thus it is often very difficult to arrest the blood from leech bites in persons of a lymphatic constitution, who are feeble, and exhausted by a lingering disease, or who have been already frequently bled.

Some individuals have but one attack of epistaxis; in others it is renewed, either several days successively, or at different periods; and if in certain cases efforts have been made to encourage it, in other cases we have been obliged to have recourse to mechanical means in order to arrest it with all possible promptitude.

As the sense of touch, the skin has presented to us remarkable anomalies in its sensibility. This sensibility has been observed to be destroyed in some individuals; it was, on the contrary, very much exalted in other instances: the sensibility of the entire skin was such, that the slightest pressure made on any one point of it obliged the patient to scream. Such an exaltation of the sensibility, if confined to the skin of the abdominal parietes, would have induced one to believe in the presence of peritonitis. Thus, every time that an individual, labouring under a bad fever, appears to suffer acutely by pressing on the abdomen, we never fail to press other points of the skin for the purpose of comparison, the better to ascertain the real nature of the abdominal pain. In the subject of one of our cases the cutaneous sensibility presented in a short space of time rapid alternations of diminution and exaltation.

But it was not merely as a sense of touch that the skin has been found altered in some of our cases. First, it presented to us different modifications in its temperature, which we have already noticed.

The exaltation, of which it is the seat, has seldom remained in its normal state. In some it was increased during the entire course of the disease, and in these the affection was generally rather mild. The state of moisture or perspiration which results from it may be continued, or alternate with such a state of dryness of the skin, either at irregular intervals, or periodically. This periodical return of the perspiration may, or may not, be preceded by shivering.

In other cases the cutaneous transpiration, far from being increased, has appeared to diminish, or to be suspended altogether, and thence that peculiar dryness of the skin so frequently observed in our cases, and which is always connected with a more or less dangerous state. Does not this dryness of the skin also, which, in no disease, is so marked as in that now under consideration, depend on the suppression of the follicular secretion? Be this as it may, we have never seen a decided amendment take place, until the skin had recovered the softness and polish which it presents in the state of health.

Several individuals, whose skin had remained constantly dry, began to perspire at the same time that their state became improved, and every thing indicated in them a tendency to a favourable termination. In twelve of our patients in particular, we observed so sudden and unexpected an improvement in all the symptoms, at the same time that a perspiration took place, that we were inclined to consider it as critical.

Most frequently we have been unable to determine with accuracy the precise day when the *apparently critical* perspiration occurred. However, we thought that it occurred in one case on the seventh day, in another case on the twelfth, in one or two others on the twenty-first. In one case the sweats occurred at three different periods; on the seventh, the fourteenth, and eighteenth day. The last only coincided with any improvement in the disease.

In several cases these sweats, which were immediately followed by any amendment, seemed to have been occasioned by emetics.

However, it must be observed that the appearance of the perspiration has been far from being invariably followed by an improvement in the disease. Thus, in one case, when it first appeared, the symptoms were observed to become worse, and yet this sweat took place on the fourteenth day. In some the skin became, and that for the first time too, the seat of a profuse sweat, a few hours before death. Often also, during the last twenty-four hours of life, the skin was observed to be covered with a clammy, cold sweat. The appearance of this sort of sweat invariably seemed to us a most unfavourable sign.

Some persons had profuse sweats during convalescence, which ceased spontaneously according as their strength returned.

The perspiration of persons labouring under bad fevers, with considerable prostration and leaden tinge of the face, appeared to us remarkably fœtid. But this phenomenon is far from being as frequent as has been stated; and we do not think that anything can be inferred from it with respect to the nature of the disease. We do not see, for instance, what connexion exists between the fœtid odour of the sweat and the putridity of the humours, which some have wished to prove by the existence of this peculiar fetor of the product of the cutaneous transpiration.

In a great number of cases the skin was covered with various eruptions—petechiæ, vibices, *sudamina*, miliary pustules, purple eruption, varioloid pustules. Such were the different exanthemes observed by us.

Petechiæ.—The petechial eruption appeared in a great number.

The petechiæ, considered with respect to their situation, also called, from their appearance, lenticular rose-coloured spots, most frequently appeared on the middle and lower part of the chest, and on the upper part of the abdomen. In some cases they covered, at one and the same time, the entire surface of the chest and abdomen. Twice we saw them extend to the upper extremities, once to the thighs, and once to the neck. We never saw them on the face.

Their number has been very variable. Several patients have presented but seven or eight petechiæ at most, which were scattered over the chest or epigastrium. In others, the eruption, which was very confluent, covered the chest, abdomen, neck, arms, and thighs. The severity of the accompanying symptoms was not always proportioned to the number of the petechiæ.

The breadth of these spots seemed to us to vary from that of a very small flea-bite to that of a lentil. They were in general round, but sometimes presented an oval or oblong form. On passing the finger slightly over these spots, it was found that they projected a little above the level of the skin. This projection, however, was not perceivable by the sight.

The colour of the petechiæ presented several shades. They had in general a rather bright rose-coloured tinge, when they appeared at a period when the adynamic symptoms were not yet much marked. But in almost all the cases where there was great prostration, and great stupor, the spots were pale, or else a livid or brown colour replaced their rose-coloured tinge. Quarin rightly distinguished three species of petechiæ with respect to their colour; some being red, others livid, and the third blackish. *These last,* he said, *are the most uncommon and the most unfavourable; those that are of a livid colour are also very alarming; nor are those that are red exempt from danger.*

We have not been able to ascertain anything definite with respect to the period of the disease at which the petechiæ began to appear. We have most frequently seen them appear in the middle of the fever, sometimes towards the end, and even during convalescence; very seldom from the very commencement.

From the moment when each spot appears ordinarily to have attained its greatest development, it continues five or six days, then fades and disappears, without leaving behind it any trace of its existence.

On one occasion, however, in an individual who had had a great number of petechiæ, we observed, after their disappearance, a real desquamation of the cuticle.

In general, the petechial eruption continues discrete; it may, however, become confluent, and then it presents in its appearance some resemblance to the eruption of measles. In some cases we have seen the petechiæ appear and disappear several times in the course of one and the same disease.

Let us now endeavour to ascertain the importance of the petechiæ in fever.

Quarin has stated, that petechiæ are common in putrid fever, less frequent in malignant fever, and very rare in inflammatory fever. Dehaen repeats, in several of his works, that stupor and prostration do not necessarily accompany the development of petechiæ. He has seen the spots come on during the progress of the slighest fevers. Stoll has made the same remark. Likewise, with respect to treatment, these authors recommend us to be guided chiefly by the aggregate of the other symptoms.

Our experience entirely confirms the preceding statements. We have seen petechial spots appear during the course of the mildest fevers, without any exasperation of the symptoms following their appearance.

These slight fevers, with petechial eruption, presented themselves under somewhat of an epidemic form. They began to appear towards the end of May ; they became very numerous during the months of June and July ; they then became somewhat diminished in August, and disappeared in September. In all these cases the eruption was discrete, and presented a rose-coloured tinge.

But, as had been well remarked by Hofmann, Mead [*], and Quarin, should the petechiæ be numerous, or of a bad colour, they are an unfavourable sign, and accompany an adynamic state more or less alarming. Of this we may satisfy ourselves by referring to several of our cases. In some of them we see that it was a little time after blood-letting had been employed, or after profuse epistaxis, that the spots appeared together with the stupor.

In another case, on the contrary, the petechiæ and stupor disappeared after the application of leeches to the anus. On the day after, the eruption again appeared, without being accompanied by more severe adynamic symptoms.

In other patients the petechiæ, after having appeared during the worst stage of the disease, survived in a manner all the other symptoms, and a few of them still continued during convalescence.

At other times we have seen the petechiæ fade and disappear on a sudden at the moment when the adynamic state became most decided.

In one case the petechiæ, after having increased in number according as the stupor increased, almost entirely disappeared the day before death. In another patient their increase in number and in the brownness of their colour marked the progress of the adynamic state. They disappeared all at once at the same time that the nervous symptoms preceding death manifested themselves [†].

Huxham and Ramazzini have spoken of critical petechiæ. Pringle and Sarcone deny their existence. In only one case Sarcone saw the petechiæ disappear at the same time that the other symptoms of the disease increased in severity, and reappear according as these symptoms became more mild. For our own part we have seen on two occasions the appearance of the petechiæ to coincide with a perceptible diminution of the symptoms.

Beside the petechiæ, those broad livid spots, or *vibices*, may be naturally placed which existed in Case 14, and which seem to be but a variety of the petechial eruption. They continued for only twenty-four hours. It was this same patient whose blood presented a sanious appearance. This case is not devoid of interest.

In some of our patients we observed an eruption of *sudamina ;* this eruption occurred particularly over the abdomen. On gently passing the extremities of the fingers over the skin of this part, a number of small inequalities were felt, which gave it a rough appearance. These inequalities consisted of a crowd of miliary vesicles, as it were crystalline, with parietes perfectly transparent, and containing a little limpid serum. The slightest handling destroyed them. After having continued for one, two, or three days at most, these vesicles disappeared, and in the place which they had occupied there was observed a desquamation of the cuticle.

In one case only the *sudamina* became much more developed. Several of them were seen to combine, and form large vesicles. One would say that it was pemphygus. It was in this individual that the remarkable eruption of *sudamina* appeared at one and the same time over the abdomen, thorax, neck, and arms, but principally around the axillæ.

---

[*] Quo plures numero comparent, eo gravior subest metus. Maximum autem vitæ periculum ostendunt, cum nigræ vel lividæ evadunt.

[†] The following fact told me by M. Senn, intern pupil at the Hotel, seems calculated to prove that the petechiæ must be considered as the result of general debility. A man, under the care of M. Dupuytren, was seized with profuse epistaxis, which could not be arrested. After some time it was no longer natural blood, but only a sort of serous liquid that flowed through the nostrils. The patient was threatened with dying of exhaustion. In the midst of this state of anemia, numerous petechiæ appeared on the trunk and extremities ; the epistaxis ceased, and according as the strength returned, the petechiæ faded. Like hemorrhages, petechiæ may then be divided into active and passive.

In this patient and in four others profuse sweats preceded or accompanied the eruption; but as sweating equally profuse is observed in many persons who exhibit no *sudamina*, it is reasonable to suppose that the *sudamina* cannot occur without a special physiological or pathological disposition of the skin. Besides, in two other cases no remarkable sweat took place. In the subject of Case 49, the appearance of the sudamina coincided with a perceptible improvement in the symptoms. Five times this eruption appeared in summer, and twice in October and February.

In one individual only did we observe a miliary eruption (Case 64); it appeared towards the twenty-first day, at the same time that the *sudamina* appeared, and a slight diarrhœa set in. The eruption covered a portion of the chest and abdomen, continued from three to four days, and seemed to contribute towards the crisis of the disease.

An anormal eruption somewhat resembling purpura appeared over the chest and epigastrium in the subject of Case 11, about fourteen days after his health began to be impaired. This eruption lasted but twenty-four hours, and appeared to exert no influence on the case.

In some of our cases, as in Case 20 and 72, varioloid pustules were observed. In one individual these pustules covered the epigastrium at the time when ataxo-adynamic symptoms of a very bad character existed; they brought no relief: in another patient they again appeared first on the epigastrium, and then extended to the thighs. They were observed to appear at the same time that nature seemed to make an effort towards a cure. Again, in another case they were observed during convalescence; they appeared successively on the thighs, face, and on the arm (Case 72).

In cases of bad fever, the skin very readily becomes gangrenous, or ulcerates in those points where it has been the seat of slight irritation. Where the skin remains for some time subjected to some pressure, and where a sanguineous congestion, entirely of a mechanical nature, takes place, this species of passive hyperemia is very often followed by an eschar; and when the latter is detached, the ulceration which ensues from it rapidly extends in depth, and attacks even the bones. This is observed principally in the region of the sacrum, and of the great trochanter.

In the same individuals, more frequently than in other patients, blistered surfaces assume a brown colour, or evince a tendency to ulcerate. In them, also, the slight engorgements occasioned by leech-bites terminate more frequently, than in other cases, in a slight ulceration of the skin. In the place of each leech-bite there is observed a solution of continuity, which seems to have been made with nippers, and around which the skin exhibits no alteration. These ulcerations occur most ordinarily in persons who are in an advanced stage of the adynamic state; and they have always appeared to be a most unfavourable sign. In one case, their appearance followed a profuse intestinal hemorrhage*.

---

* Whilst we acknowledge that the disposition to gangrene of the skin is less uncommon in bad typhoid fevers than in other diseases, we think that even in these fevers the frequency of such a phenomenon is much exaggerated. With respect to internal organs, their gangrene is still more uncommon than that of the skin. With the exception of the cases, which are even less numerous than has been stated, in which we ascertained in the exanthematous patches of the intestine an appearance of eschar, our cases furnished us with only one case of gangrene: it was in the lung of the individual who forms the subject of our fifteenth case; and in this instance it was very evident that this gangrene was merely accidental, and altogether independent of the principal disease. How often have we not heard of the frequency of gangrene in fevers called adynamic, putrid, &c.? What consequences have not been drawn from it, with respect to the nature of these diseases? In this case, as in a thousand others, as in that where it is supposed that everything can be explained in bad fevers, either by the alteration of the blood, or

ARTICLE III.

TREATMENT.

In the preceding cases, we have seen the patients who form the subjects of them, subjected to the most different modes of treatment. Some took, during the entire progress of this disease, nothing but simple diluents of an acidulous or mucilaginous nature: they observed strict regimen and repose, and no active treatment was employed with them. Others took no other medicine internally than these same diluents; but blood-letting, to a greater or less extent, was resorted to. In several, the skin was covered with sinapisms, or blisters, or irritated by stimulant frictions. In some, cold applications were made to the head, and baths of various temperatures were employed. Purgatives, and more frequently emetics, were employed in a considerable number of cases; and lastly, with others, a tonic and stimulant treatment was adopted. Several, either at the same period, or at different stages of their illness, were treated, at one and the same time, or successively, by two, three, or four of these methods.

If we now endeavour to estimate the influence of these different modes of treatment, we shall find the most serious difficulties in the inquiry. For all we might cite instances of success, and for all even the reverse, according as we should dwell more particularly on the one or the other; it would be easy, then, to find motives for preferring or excluding such or such a treatment; we might even take a more convenient station, and say that, *according to the cases*, such or such a treatment should be preferred. But whilst thus confining ourselves to the generalities of the question, we should not make much advance in it, and certainly we should not be able to solve it, because the elements of its solution do not exist in our cases. It seems to us that whatever may be the method of treatment employed, there is a certain number of cases in which nature conducts the affection to a favourable or fatal termination, without the treatment having any share in the result. From this, however, it must not be inferred, that our therapeutic means exercise no influence on the progress and mode of termination of fevers. But if nature performs so considerable a part here, it is manifest that in order to appreciate the influence of the treatment, whether it be injurious or serviceable, it is necessary to collect and subject to a rigorous examination a much greater number of facts than ours, to the end that, the same results being re-produced a great number of times, we may be able to calculate what belongs to nature and what belongs to art. The writers on epidemic diseases have not proceeded in this way, the majority of them thinking it sufficient to point out, in a general way, what treatment has appeared to them to succeed best. The treatment which was deemed most successful in their hands was almost invariably that which was suggested to them by the theory under whose influence they observed the diseases. Thus, very little advantage can be derived from what they have transmitted to us as the result of their experience in therapeutics. It would not have been so, if, instead of general results, they had drawn up tables exhibiting the number of patients subjected to such or such a mode of treatment. The man who merely publishes some cases and observations on a disease, should do nothing else than note a simple coincidence between the

---

by gastro-intestinal irritation, we shall repeat what Sydenham said of several physicians of his time: Si quando symptoma aliquod, quod cum dicta hypothesi apposite quadrat, revera morbo competat, cujus typum delineaturi sunt, tum illud supra modum evehunt, ac plane reddunt ex mure elephantem, quasi in hoc scilicet totius rei cardo verteretur, sin hypothesis minus congruat, aut prorsus silentio, aut levi saltem pede transmittere consueverunt, nisi forte beneficio subtilitatis alicujus philosophicæ in ordinem cogi ac quoquo modo accommodari possit.

employment of such or such a treatment, and the favourable or unfavourable termination of the disease. It is only when this coincidence has been repeated very frequently, that it is allowable to consider as connected together two facts which presented themselves together so frequently. By collecting the numerous observations published by men of all opinions on this particular point, we think that the treatment of fever might be not a little benefited. However important this subject may appear to us, the nature of this work does not allow us to dwell on it. Without going beyond our own cases, and, consequently, without intending to draw any general conclusions, we shall endeavour to recapitulate, in a few words, the various phenomena observed in our patients whilst they were submitted to different kinds of treatment. We shall present each mode of treatment separately, and shall trace the changes which coincided with their employment; first, in the general aspect of the disease; secondly, in its principal symptoms. This will be a commencement of the great work which we would wish to see undertaken by collecting, in a therapeutic point of view, the numerous cases of fevers scattered through different authors. We shall add, that even this work can be useful only on this condition, that it should not be forgotten that the number of successful, as well as that of unfavourable results, constitutes in a manner but an ideal majority; for very few authors have published all the cases observed by them, and the greater number of them have been solicitous to transmit to us those cases only which favoured their own theories. Read, for example, the cases published by the disciples of Brown; you will there find no instance of bad fever successfully treated by blood-letting; still these cases exist, and they must have seen them as well as we. Read, on the other hand, the collections of cases published by the followers of M. Broussais' school; you will not find therein a single case of these same diseases which recovered when treated by tonics; and yet such cases must have occurred on all sides of them, and they must have seen them.

SECTION I.

TREATMENT BY STRICT DIET, AND MUCILAGINOUS OR ACIDULATED DRINKS.

A considerable number of our patients were subjected to this mode of treatment. In some the affection was slight, in others it was severe; and we observed the various symptoms of typhoid fever, such as the various phenomena regarding the innervation, delirium, stupor, prostration, tongue dry or black, meteorism, petechiæ, etc.

During the employment of this mode of treatment we observed all the symptoms to improve in several, and the disease to terminate as promptly and as favourably as in others placed under similar circumstances, and with whom blood-letting was employed. We have frequently seen a severe attack of fever terminate in twenty-four or forty eight hours in persons in whom the disease was occasioned by bad living, and who were rapidly restored to health by strict regimen and rest, and nothing further.

We are not disposed to think that continued fevers, *thus left to nature*, had a determinate duration, and that they terminated on certain days rather than on others; and with respect to these affections, the ancient doctrine of critical days appeared to us completely erroneous.

With respect to crises, should they not be particularly evident in those cases wherein no active treatment had interrupted or thwarted what is called *the progress of nature*: still the phenomena to which the name of *crisis* has been given did not mark the termination of the disease except in a very small number of cases. In only four did the appearance of a profuse sweat coincide with the cessation of the fever, and the other morbid phenomena. In other cases there was still some sweating towards the termination of the disease; but, from the circumstances under which it appeared, even the ancients would have hesitated to assign to it a critical character. As an instance of this, we may refer to the young girl who forms the subject of our 49th case. In her an habitual sweat from the axilla was restored as soon as convalescence commenced. But, in this case, can we see anything else but the re-establishment of a secretion, which had actually become an element of health, which had been suppressed by the disease, and which must re-appear from the moment the disease ceases? Still less shall we consider other sweats as critical, which, under the influence of the expectant method, the results of which we are now examining, appeared long before the termination of the disease. In fact, in several individuals, also treated in this way, no sweat, nor any other critical phenomenon, was observed. In the subject of Case 13th, who, during his tedious and severe illness, was also treated according to the expectant method, one of the lower extremities became, during convalescence, the seat of a profuse suppuration, which carried the patient to the grave.

Besides those patients with whom the expectant method alone was employed, there are others who were treated according to it only at the commencement of their illness; at a later period an active treatment was employed to check the increasing progress of the disease; sometimes an evident improvement followed this change of treatment; but sometimes, too, the disturbance occasioned in the system by the active treatment employed was not more advantageous than the expectant system had been salutary, and the disease still progressed towards a fatal termination.

Other patients, on the contrary, were subjected, from the very commencement, to different sorts of treatment more or less active. No benefit resulted from it, and the disease continued stationary, or became worse. It was under these circumstances that, giving up all active treatment, we contented ourselves with keeping the patients on diet and simple diluent drinks; only, in some instances, weak broths, or a little wine, were added to these drinks. Some of our cases furnish us with instances in which a return to the expectant method was attended with advantage. We discontinued to torment nature with remedies which were followed by no improvement; we contented ourselves with removing everything which could do harm, and the cure was the result of the mere effort of nature, aided by simple hygienic means.

If we now wish to appreciate the influence of the simple expectant method over the great functional disturbances of the different organs, we shall come to the following results:—

Let us first study its influence on disturbances of the digestive passages.

Anorexia. Bad taste in the mouth has in general disappeared only by degrees in persons submitted to this mode of treatment. In several instances diet and diluents, continued for a long time, proved unable to remove these symptoms, which, in the individuals who form the subjects of those cases, yielded rapidly to the use of evacuants.

Some entered the hospital with vomiting, which continued as long as they took nothing but diluents, and which afterwards ceased after the employment of other means, as we shall see presently.

Under the influence of the expectant method, the tongue, in several instances, presented no change, and its aspect was not altered till other treatment was tried. Thus, in some cases, it retained its uniform whiteness, its yellowish coat in others, its white appearance, with red points, in several; in others, its uniform red colour, with continuance of its moisture; and in others its redness and dryness; in others, too, its black appearance. In these latter cases we were enabled to see that it is not true, as has been stated, that it is only after the employment of tonic medicines that the tongue becomes black.

In several other persons, who were also subjected to the same treatment, not only the state of the tongue was not improved, but this organ assumed an appearance corresponding with the increase in the severity of the other symptoms of the disease. We have, for instance, seen it become redder and redder, and also become dry, brown, and incrusted in cases 25 and 64, as well as in a few others.

To conclude, in some patients, who, like the preceding, do nothing but observe strict diet and drink barley water, the tongue throws off its coats, resumes its moist appearance, and returns slowly or rapidly to its normal state. In one case the tongue, which was covered with a thick yellowish coat at the time the patient entered the hospital, became red and dry as soon as bleeding was resorted to. The patient was then treated according to the expectant method. At first the tongue remained red and very dry ; it was then observed gradually to recover its natural appearance, at the same time that the other symptoms became improved. The same may be said of two other cases, in both of which the dryness of the tongue appeared or increased after blood-letting, and gradually recovered its moisture and red colour ; once the disease was left to nature. In one or two cases the foulness of the tongue was not at all influenced by blood-letting, whilst the employment of the expectant method gradually restored the organ to its natural state. In some of our patients the tongue, which was red and more or less dry at the time of their admission, gradually recovered its normal appearance without the employment of any active treatment. In two or three other cases the brown or black colour of the tongue also disappeared under the sole influence of diet and diluents, no other treatment having been employed. In others, again, the uniform whitish coat which covered the tongue disappeared without anything else having been prescribed but diet and acidulated or mucilaginous drinks.

In several of the cases the diarrhœa was neither increased nor diminished by the expectant method of treatment. In one case it appeared for the first time whilst the patient was under this mode of treatment. It at first increased in one of our patients ; then, after an ineffectual application of leeches to the anus, it gradually ceased. Again, under the influence of the mere expectant treatment, the diarrhœa gradually diminished in a great number of our cases. Of these latter some had not been subjected to any active treatment ; others had at first been bled, which did not appear to exercise any influence on the diarrhœa. In one patient, one of those put on the expectant method of treatment, the diarrhœa disappeared suddenly at the same time that a perspiration set in.

The mere observance of strict diet, and the use of diluent drinks, have been followed by the slow or rapid disappearance of the febrile disturbance in several cases. This same treatment put a termination to the fever after we had ineffectually tried blood-letting in some cases, evacuants in others, and tonics in several.

Lesions of the respiratory apparatus have not been more common in persons treated by simple diluents than in those submitted to a more active treatment. Pneumonia being once developed, has not, generally speaking, been left to itself, when once its existence has been ascertained.

Some individuals, in whom the nervous symptoms predominated, have been submitted exclusively to the expectant method. In the subjects of some of our cases, the stupor, delirium, prostration, and coma disappeared, whilst the patients took nothing but barley water. In others these same symptoms, ineffectually met by blood-letting, gradually disappeared under the influence of a simple expectant method of treatment. In others this method, at first employed singly, did not prevent the nervous symptoms from appearing and increasing ; but in these cases the other methods substituted for it (antiphlogistics or tonics) were not more serviceable. Again, in other cases, the nervous symptoms, which became more and more developed whilst simple diluent drinks were employed, disappeared as soon as tonics were substituted for them.

The antiphlogistic treatment and the tonic treatment have been, each in its turn, accused of producing petechiæ. However in several of our cases these spots appeared at a period when no active treatment had been as yet employed. An eruption of sudamina also appeared in one patient, when he had not yet taken anything but barley ptisan.

SECTION II.

TREATMENT BY BLOOD-LETTING.

Blood-letting was employed in a very great number of our patients. Whilst it was evidently serviceable in some, it proved ineffectual in others ; and in several its employment was followed so rapidly by an exacerbation of the symptoms, that we have been disposed, in more than one case, to attribute the change to it. However we must not lose sight of several circumstances which might have contributed to render blood-letting much less effectual in these cases. In the first rank we must place the advanced period at which several patients were bled for the first time ; some already presented a state of prostration, which was almost invariably increased after the bleeding. In some the bleeding seemed to do harm by being excessive ; in others, on the contrary, the leech-bites yielded so little blood, that the good or harm following their application could not be fairly attributed to them. Again, in many cases, it was difficult to distinguish the real influence exercised by bleeding, because it was not the only means employed, and oftentimes, either simultaneously with it, or previously or subsequently to it, other means had been resorted to—sometimes cutaneous revulsives, sometimes tonics and internal stimulants, and sometimes evacuants.

Several patients as yet presented no bad symptom when they were bled ; they merely exhibited that group of symptoms of what is called bilious or inflammatory fever ; after the bleeding, the state of some became suddenly worse. In others no change was observed at first ; then the disease gradually progressed towards a fatal termination. In this case the bleeding exercised but a purely negative influence ; it did not arrest the evil ; but it is a matter of doubt whether it may not have contributed to increase it. The number of patients in whom the affection became worse immediately after bleeding was greater than the number of those in whom the affection continued to go on in the same way as it had before the patients had lost any blood.

In a few of our cases the first bleeding was followed by a manifest improvement, which disappeared after the bleeding was repeated.

Of thirty-five individuals who were bled, and whose illness terminated fatally, seven were bled at the onset of the disease, from the first to the fourth day. Nine lost blood from the fourth day exclusively to the eighth inclusively. In five bleeding was employed from the eighth to the twelfth day. Three were bled from the twelfth to the sixteenth day. In the others blood was taken at periods which we cannot state precisely, but in most instances it was at a time remote from the onset of the disease.

We shall now speak of other patients who recovered after having been subjected, like the preceding, to one or more bleedings. The bleeding was far from having the same influence on all. Some manifested a sudden improvement after losing blood ; in them it was scarcely possible to doubt the advantage of the bleeding. This occurred in thirteen of our cases. But in none of these thirteen, except one, was the disease suddenly removed by the bleeding ; the symptoms merely were improved, and probably its duration shortened. It is not, then, so very common an occurrence to see a disease suddenly arrested, and, as it were, strangled by blood-letting. Such a claim for its beneficial effects is entirely unsupported by clinical experience.

In one case the first application of leeches to the anus was not followed by any change; they were applied a second time, and a rapid improvement took place.

In another case no improvement followed the first bleeding, which was employed on the sixth day; after a second, which was employed from the eighth to the ninth day, all the symptoms suddenly disappeared at the same time that a perspiration came on.

In another the disease improved after the first bleeding; then, a very little time after, a new exacerbation of the symptoms was observed, which disappeared after the application of leeches.

Of these thirteen patients some were bled during the first days of their illness, but others of them not till the seventh or eighth day; others at a still more advanced period, as towards the fourteenth day. In the young girl who forms the subject of one of our cases, leeches were repeatedly applied during the entire course of the disease; they were continued at a time when the prostration was very great.

We shall now consider the influence of blood-letting in the twenty-six other individuals, who also recovered after having lost more or less blood. Very diffe-rent from the thirteen above mentioned, they manifested no improvement immediately after they were bled. Thus we saw the disease pursue its course, then diminish progressively without seeming to have been in any way influenced by the treatment in several of these cases. Of these there were two, however, in whom the bleeding seemed to have been beneficial, not against the principal disease itself, but to arrest the progress of a pneumonia which supervened.

Again, in some other individuals, the disease became worse so suddenly after bleeding, that the latter measure seemed to us to have contributed to this effect, and the improvement did not commence till a certain time after its employment.

In these twenty-six cases the bleeding was seldom practised at the commencement, but most frequently at a more advanced period of the disease.

To recapitulate, among nearly eighty individuals labouring under continued fever, light or severe, and treated by blood-letting, local or general, we find but sixteen in whom a visible improvement, which cannot be called in doubt, immediately follows the opening of the vein or the application of leeches. And again, of these sixteen cases there are three in whom the amendment disappeared after the bleeding was repeated. Observe, again, that in two or three of these sixteen cases, at most, the disease was arrested all at once after the bleeding; that in all the others it was only improved, and that this improvement was principally marked when the period at which the bleeding was performed coincided with that when, in our patients treated according to the simple expectant method, we saw that there was tendency to a similar improvement taking place spontaneously.

Of the remaining individuals, we find thirty-four in whom, after one or more bleedings, the disease still continues its course, so as to terminate in death, or in a return to health. Here the bleeding no longer has any immediate influence; but it is not unreasonable to think, that in several of these cases it might dispose to a favourable termination of the disease.

In twenty-four other cases we observe, after blood-letting, an exacerbation of the disease, as immediate and as marked as the improvement had been in the sixteen individuals above mentioned; so that the same reasoning which inclines us to attribute the benefit which these latter experienced, to the bleeding, must also make us admit that it was the bleeding which rendered the state of the former worse. For our part, we shall take all these facts into account; we shall reflect on all the details of each case, in order to discover the circumstances which could have occasioned such opposite results. But we shall feel that we have only laid down some corner-stones; and we shall wait till sufficient materials have been amassed, in order to think ourselves warranted in pronouncing on the benefit or injury which may be attributed to the bleeding in these different cases.

Let us now consider what was the influence exercised by blood-letting on some of the most prominent functional disturbances observed in the course of fever; and before we go further, we shall say, that in a great number of cases these functional disturbances, thus examined one by one, are found to be much less modified by bleeding, than one would have been inclined to admit *à priori.*

Thus, in a considerable number of our patients, the anorexia, and bad taste in the mouth, were not lessened after venesection, or after the application of leeches either to the abdominal parietes or to the anus.

In several cases, where acute pain existed, which was increased by pressure, whether at the epigastrium, in the ileo-cæcal region, around the umbilicus, or over the entire abdomen, bleeding was immediately followed by the disappearance of this pain. In the subject of one of these cases, one general bleeding was all that was employed. In the others so affected, leeches were applied, either to the anus, or to the abdominal parietes. The subject of one of these cases had a very acute pain in the epigastrium, which disappeared after this part had been covered with leeches. Another of these individuals complained of pains over the entire abdomen, which were exasperated after the employment of an emetic; in this case there was this peculiarity, that the leeches, instead of being applied over the abdomen, or to the anus, were applied to each side of the chest in consequence of a distressing cough under which the patient laboured; the day after the leeches were so applied, there was no longer any trace of abdominal pain.

But we were far from succeeding in removing this pain by blood-letting in all the cases wherein it existed. In one case, it became merely less intense, but did not disappear, after a general bleeding. In two other cases, wherein the vein was opened, but in which no leeches were applied, it continued without any abatement. In another patient, the general pain of the abdomen still continued after bleeding; but it disappeared after the application of leeches to the anus.

The different appearances of the tongue in fever may be very differently modified by blood-letting, as the following recapitulation will show.

First Case.—*Tongue covered with a white or yellow coat, without any trace of redness, still remaining moist.*

Nineteen individuals presented this appearance of the tongue, when blood-letting began to be used. In ten of them, the tongue did not change its appearance after bleeding. In seven others, a very remarkable change was observed in the appearance of the tongue after bleeding; in some it became red; in others dry and black. In only two of these nineteen individuals, did the tongue resume its natural appearance; and we must again observe, that in one of these this return of the tongue to its natural appearance did not take place suddenly.

Second Case.—*Tongue red, with or without the admixture of any coating, still retaining its moist appearance* *.

Twenty-three persons presented this appearance of the tongue, when blood-letting began to be employed with them.

---

* Under this second case we include, first, the tongues, which are of a uniform more or less

In eight of them the tongue underwent no change after the bleeding. In three others it became dry immediately after the patients had lost blood. In another it became dry after two bleedings had been performed, with a very short interval between them. Still, notwithstanding this unfavourable sign, the patient was bled a third time ; after which the tongue not only became moist, but also lost its redness.

In another case the tongue became covered with a thick yellowish coat after venesection.

To conclude ; in ten of these twenty-three individuals, the blood-letting was rapidly followed by the return of the tongue to its normal state. In some of them leeches were applied to the anus, or to the sides of the chest. In the others, venesection was the mode employed.

Third Case.—*Tongue dry, either with a uniform red colour, or with a pale colour; or with a white or yellow coat on its surface.*

Nineteen individuals presented this appearance of the tongue when they were bled. In four of them the tongue underwent no change after bleeding. In a fifth the tongue became moist at first, after the application of leeches to the anus ; it afterwards soon resumed its dry appearance, which was not removed by a second application of leeches.

In ten cases the tongue became drier, or black, after bleeding. In one of these cases leeches were applied to the epigastrium several days in succession.

In only four cases did the tongue become moist immediately after bleeding. In one the dryness of the tongue did not disappear after the first loss of blood. On the contrary, the tongue began to become drier after the first application of leeches to the anus ; it became moist, but changed the yellow coat which covered it into a bright red after a general bleeding ; at length it recovered its normal appearance, after a second application of leeches to the anus.

Fourth Case.—*Tongue dark-coloured, with or without incrustation of the lips and teeth* *.

Only four persons were treated by blood-letting, with such an appearance of the tongue. In three of them this appearance continued after the bleeding. However, in one of these three individuals the tongue, without having lost its black colour, appeared more moist the day after leeches were applied to the anus ; and as a tonic treatment was immediately commenced, the ulterior effects of the bleeding, with respect to the tongue, can no longer be appreciated.

In the fourth of these cases the dark appearance of the tongue increased after fifteen leeches had been applied to the anus. Forty-five patients were treated with blood-letting during the existence of diarrhœa, more or less severe.

Of these forty-five individuals, there are nineteen in whom venesection was performed once or oftener ; and twenty-six others in whom leeches were employed in different points ; in nineteen cases to the anus (once or oftener) ; in three cases to the abdominal parietes ; in four cases to other parts, either behind the ears, or to the neck, or the chest.

---

bright red through their entire extent, without being covered with any coat ; secondly, those which present a white or yellow coat with red points ; thirdly, those which, being white or yellow at the centre, present a red appearance at their edge or apex.

* Since these cases were collected, we have often tried the application of leeches to the anus, and particularly to the epigastrium, in patients whose tongue was dry and black, or only viscid and brown ; and the general impression on our minds from such trials is, that in the very great majority of cases, the blood-letting had at least no beneficial influence on this state of the tongue. This has also been laid down by M. Broussais.

Let us now consider the influence exercised on the diarrhœa by these different modes of bleeding.

1st. *General bleeding.*—It possessed no influence over the diarrhœa in eleven cases in which it was employed. In two cases it was followed by slight diminution of the purging, but it did not stop it. In five cases the diarrhœa was increased after venesection.

We may add, that in some patients who had no purging at the time they were bled, venesection did not prevent the occurrence of this symptom.

2nd. *Application of leeches.*—In seven of our cases the application of leeches to the anus did not prevent the continuance of the diarrhœa. In one case the diarrhœa was increased after this application. It was diminished after this application in six cases. In four of our cases the application of leeches immediately removed the diarrhœa altogether.

When applied in three cases over the abdominal parietes, once to the ileo-cæcal region, and twice to the epigastrium, in none of these three cases did the leeches exercise any influence over the diarrhœa.

In the four cases wherein the leeches were applied to other parts, different from the abdomen or anus, no change was produced in the purging.

Thus in twenty-six individuals, who lost blood from other parts than the anus, there was not one in whom the diarrhœa ceased; in two only it underwent a slight diminution; and in several it was increased.

In nineteen persons who lost blood from the anus, we find ten in whom the diarrhœa was lessened, or ceased immediately; it increased in one only, but in seven it continued.

In one case intestinal hemorrhage occurred, after the patient had been bled several times successively.

Meteorism, which, in bad fevers, has been often considered as a mere product of intestinal irritation, is one of the phenomena of those diseases against which blood-letting has appeared to us least beneficial. When this treatment was employed during the existence of the meteorism, it did not stop it, or it did not even prevent it from increasing; and when employed at a period when the meteorism did not yet exist, blood-letting, whether general or local, has been rapidly followed by the appearance of this symptom in several cases. We shall further observe, that of the seventy-four cases in which blood-letting was employed, there were but sixteen in whom we saw the meteorism occur after this bleeding; it would, therefore, be premature to say that it contributed to its production; and all that can be inferred is, that the blood-letting did not prevent the development of the meteorism. We shall see presently how this phenomenon is modified under the influence of a treatment entirely different from the antiphlogistic.

The febrile movement was stopped after blood-letting in only a very small number of our patients. In others the fever was only diminished after bleeding; whilst in some it only became more intense after this mode of treatment. What was principally observed in several instances, was the increased acceleration of the pulse, according as the bleeding was repeated, or immediately after a single bleeding was employed. But in the great majority the febrile movement did not, after bleeding, undergo any immediate modification, which could be attributed to it. It continued as before; then, without having appeared in any way directly influenced by the bleeding, it gradually either increased or diminished.

The nervous symptoms presented by our patients were often met by blood-letting, the employment of which was far from being invariably attended with favourable results, as we shall see.

These symptoms were not diminished after bleeding, more or less frequently repeated in seven of our cases. They were improved in five instances, and in fifteen cases they were rendered much worse. Thus, in twenty-seven individuals who were bled during the existence of these different disturbances of innervation, there were only five in whom the nervous disturbances were diminished. In seven cases these disturbances did not appear to be influenced in any way by the bleeding; and in fifteen everything became worse after the patients lost blood.

If we would go beyond the circle of the particular facts contained in this work, we would say that, in many other similar cases wherein we also tried to combat the nervous symptoms of bad fevers by blood-letting, we arrived at the same results; and we have seen these symptoms sometimes yield to bleeding, but most frequently resist it; sometimes, also, become visibly worse after each bleeding. Such facts have so frequently fallen under our observation, that we are firmly convinced that repeated bleeding not only will not cause the nervous symptoms of bad fevers to disappear, but that they occasionally exercise a direct influence on the exasperation of these symptoms. And observe, that this exasperation takes place not only in those cases where the individuals are in a state of prostration and stupor, where, in a word, the adynamic state predominates; this exasperation, after bleeding, is equally observable in several individuals whose strength is far from appearing to be exhausted, who manifest symptoms of delirium, the different aberrations of sensation and motion, and in whom, in a word, the ataxic state predominates.

It appeared to us, also, that in almost all cases, when no amendment is obtained, or when the nervous symptoms increase after the two first bleedings, it is dangerous to repeat the operation.

But this is not all. This part of the work contains a number of cases in which the nervous symptoms developed themselves immediately after the patients were bled. See Cases 1, 4, 13, 17, 19, 20, 68, 69, 72.

From these latter facts, shall we merely draw the conclusion that bleeding, employed at a period when the innervation as yet presents no disturbance, does not prevent this function from being subsequently disturbed? Shall not these facts induce us to inquire whether, in certain cases, the loss of blood which the patient sustains is not the direct and immediate cause of the disturbances of the innervation which he manifests? What we have seen in this respect scarcely allows us to doubt but that this is sometimes the case. But, to solve this question satisfactorily, how many facts are not still wanting!

There are, moreover, many other phenomena connected with bad fevers, in reference to which the questions just proposed may be again started. What influences, for instance, has blood-letting on epistaxis, which appears so often in different stages of these diseases? By reference to our cases, we shall find some in which nasal hemorrhage came on after bleeding. We find other cases, also, in which, notwithstanding bleeding was resorted to, the attacks of epistaxis became more and more frequent, according as a vein was opened, or leeches were applied.

After epistaxis, we shall consider the phenomenon of petechiæ with respect to the influence of blood-letting on those small cutaneous hemorrhages. In several cases these hemorrhages came on after bleeding. In no instance did bleeding appear to contribute to their disappearance. We have already mentioned a fact which proves beyond doubt the influence which excessive loss of blood exercises on the production of petechiæ. We may remark, that we have seen them cover the skin with almost equal frequency, both in those who had been and in those who had not been bled.

SECTION III.

TREATMENT BY EVACUANTS.

Forty-six of our patients were subjected to this mode of treatment ; ten took only purgatives, and thirty-six took emetics, generally uncombined ; sometimes, however, in combination with cathartics.

In the ten individuals who were only purged the following results were observed :—Only one of them found any beneficial effect, but this individual was placed under particular circumstances. The cause of the fever, and of the other bad symptoms in this case, was attributable to an accumulation of fæces of long standing, and a cure was effected by removing these.

In four other cases the purgatives employed, whether at the onset of the disease or during its progress, did not correct its course ; neither did they appear to exercise over it a directly injurious influence. However, in these four cases the disease terminated fatally.

In five other cases the employment of purgatives, given by the mouth or in the form of lavement, was followed by a more or less immediate exasperation of the symptoms. The individual in question took a great number of laxatives during the course of the disease. In these five individuals the affection terminated fatally.

Of thirty-six patients who took emetics, three experienced no perceptible effects from them ; eleven found them injurious, either immediately, or after an improvement which was but transitory. Twenty-two recovered rapidly after having taken tartar emetic or ipecacuanha.

In the majority of cases of this third class, the change for the better which followed the employment of the emetic was so prompt and so marked, that it is impossible to refuse to allow that the treatment had an active share in the cure. But we should be cautious in supposing that it was in as great a proportion as the recoveries which took place after emetics. This proportion is found so considerable in our cases only because, as we wished to prove that these emetics are not only oftentimes unattended with danger, but that their efficacy is at times very great, we are obliged to select, amidst a great number of facts, those whose efficacy might be least disputed. Had we published all the cases which we have met with in which emetics were given, we should have found a considerable number wherein we should have seen the disease no more influenced by emetics than it was in other cases by blood-letting. We might also have found a greater number than that cited by us in which the employment of emetics was very injurious.

From the results of the cases contained in this volume, we should not then infer that the treatment by emetics was more successful than other modes of treatment. But the consequence to be drawn is this, that emetics may be given with impunity in some cases, and that, in others, they are followed by an improvement which we had to no purpose endeavoured to obtain, either by the simple expectant method, or even by blood-letting. What are now the cases in which it is right to have recouse to emetics? This will be shown to us by the examination of the influence of these medicines over the principal symptoms of fever.

There are few functional disturbances of the digestive passages which we have not seen to disappear promptly after the employment of an emetic.

Thus the loss of appetite and bad taste in the mouth ceased after vomiting was excited in several of our patients.

The nausea and vomiting which annoyed some of our patients did not appear after they took an emetic.

After the employment of these same means, we saw the pain in the epigastrium, and the constriction or weight in the same region, disappear in some of our cases.

Some of our patients, to the number of twenty-five, had their tongue covered with a white or yellow coat, more or less thick, without the admixture of any redness, without any contraction of its muscular tissue, its moist appearance still remaining, when they took a simple emetic, or an emeto-cathartic.

In only two of these twenty-five cases did the state of the tongue become worse after the emetic ; it became red and dry. In six of these same patients the tongue remained what it was before vomiting had been excited. In the remaining seventeen the tongue resumed its natural appearance in twenty-four or thirty-six hours.

In one case, in which the tongue was covered with a uniform whitish coat, as in the preceding, and also presented an appearance of commencing dryness, an emetic was given, and the tongue rapidly returned to its normal state.

Instead of being white or yellow, without any mixture of redness, the tongue presented either uniform redness, without any coat, or a red tint at the apex, edges, or centre, with a coat on the other parts, or else a cluster of red points over its entire surface, as was observed in ten of our cases. Notwithstanding such a state of the tongue, these ten patients were treated with emetics.

In four of these ten the tongue resumed its natural appearance a little time after an emetic had been given, but with circumstances to which it is important to revert. Thus, in one case, the tongue presented a white appearance, with red points, and was beginning to become dry ; the latter phenomenon disappeared after a bleeding ; it was then an emetic was given, which purged without vomiting. In another of these four cases, to be sure, the tongue lost some of its redness after the patient had vomited ; but every other symptom became worse. In another of these four patients, whose tongue presented two white lateral bands, with a red appearance of its centre, this tongue did not resume its natural appearance till a profuse perspiration was brought on by vomiting with six grains of ipecacuanha.

In three of those ten cases the tongue underwent no change after the administration of an emetic. Again, in the three others the tongue became redder, or was even dry, after an emetic was taken.

Diarrhœa, of greater or less severity, affected sixteen individuals when an emetic was given to them. In only two of these sixteen persons the diarrhœa was not modified.

In the other fourteen it was suspended ; but this suspension did not always occur in the same way ; sometimes the diarrhœa ceased abruptly, and did not reappear ; and sometimes it continued for twenty or thirty hours, and then ceased. In several instances it appeared more profuse on the day the emetic was given, and the following day it disappeared. At other times, after having ceased immediately after vomiting had been excited, it re-appeared on the next day, or the day after that ; this re-appearance, however, was but temporary. At other times, after being suspended for the thirty or forty hours following the vomiting, it re-appeared, and continued.

In four of our cases the diarrhœa appeared after the employment of an emetic. After having existed at the commencement of the disease, and then ceased spontaneously, it appeared again after the employment of the same medicine in two of our cases.

Much importance has been attached, in latter times, to those cases in which the functional disturbances of the stomach come to be complicated with fever after the administration of an emetic ; but, prejudiced as persons were with respect to the injurious effects of emetics, they overlooked other remarkable cases in which this fever disappeared, on the contrary, after a vomit. This, however, we witnessed in several of our cases. Among the subjects of these cases some had profuse sweats after having vomited, whilst some did not sweat. In all the fever ceased the very day, or the day after, the emetic was taken.

In connexion with these cases, which point out the beneficial influence of an emetic over fever, we could refer to others in which the fever continued or increased after vomiting had been excited. In some of these cases there was at first an apparent amendment on the very day when the emetic was given ; but the next day the fever resumed all its intensity. In one of our cases it was after the administration of two grains of tartar emetic that exacerbations appeared resembling those of pernicious fever.

Whenever severe nervous symptoms existed, we did not find them to be improved by the employment of emetics or purgatives. Sometimes they merely continued, sometimes they increased immediately after the use of these means.

From the different facts now stated, what conclusion shall we deduce? This—that, notwithstanding the strange abuse of evacuants, their employment should not be generally proscribed, and that there are cases in which their utility cannot be called in question. If there be a fact in medicine, of which we are convinced, it is the sudden improvement which occasionally follows the use of an emetic or purgative in persons who distinctly present the symptoms of that affection called gastric or intestinal derangement (embarras). Another fact, of which we feel no less convinced, is, that the fever, which may accompany these symptoms, often disappears with the latter after the patient has been vomited. Towards the end of the summer of 1829, which was occasionally rather cold and moist, we found frequent opportunities of employing tartar emetic with the greatest advantage in cases similar to those just mentioned. We shall confine ourselves to the detail of the two following cases, which bear considerable resemblance to others already reported.

A middle-aged woman was received into the hospital Cochin during the month of September, 1829. She complained of violent headach, of pain in the joints, and in different parts of the chest. The countenance was expressive of great prostration, and the red colour of the cheeks contrasted with the yellow tint around the eyes, the alæ nasi, and the lips. The tongue was covered with a thick yellow coat ; the patient was distressed with constant nausea ; the epigastrium was free from pain ; the stools were scanty ; pulse frequent, and skin hot. This state continued for four days ; the patient became weak ; there was a tendency to the adynamic state ; at this time two grains of tartar emetic were given, and she was frequently vomited. On the day after we found the patient, for the first time, free from fever ; the nausea no longer existed ; the pains were no longer felt ; the tongue still remained a little loaded. On the following days she was very well.

A hotel-keeper came under our care with all the symptoms of what is called bilious fever ; supra-orbital headach of the most distressing character ; pains of the joints and towards the loins ; incessant inclination to vomit, and from time to time some vomiting ; tongue white, broad and free from redness ; intolerably bitter taste in the mouth ; feeling of constriction at the epigastrium ; constipation ; pulse frequent and hard ; skin hot, and every evening a febrile accession, during which the headach was very much increased ; the accession of fever terminated every morning in a very profuse sweat. We had him bled from the arm ; no improvement followed. The application of leeches to the anus was equally ineffectual. Six days passed on in this way, and the state of the patient was not improved ; the fever was constantly very high. The patient stated, that some years before he had had a similar attack, and that he got quite well after being vomited. He importuned us to try the same means. We accordingly gave him two grains of tartar emetic. He vomited a great quantity of green bile. For the rest of the day he no longer felt any nausea ; in the evening the febrile accession did not return ; in the morning he was free from fever ; and the day after was convalescent*.

---

* We have, subsequently to this, met with several other such cases, and we feel satisfied that emeto-cathartics may be given with the greatest advantage in cases similar to the above.

Experience, then, does not allow us to doubt that, in certain morbid states, with or without fever, which are readily recognised by well-marked symptoms, emetics may be of real advantage. Their efficacy in these cases seems to us one of the strongest arguments against the doctrine which explains every functional disturbance of the stomach by gastric irritation, and every continued fever by gastro-enteritis. The old theories, according to which the success of emetics was accounted for by supposing that these agents freed the stomach from matter accumulated in it, appear to us equally untenable. Several facts, already mentioned, seem to us clearly to prove that the existence of these accumulations is, at least, very hypothetical; we have found no trace of such in the stomach of individuals, who, up to the moment of their death, had presented that group of symptoms, which Stoll, for instance, would have explained by the presence of accumulations (Saburræ) in the stomach.

Perhaps we should better appreciate the advantages of emetics, if, instead of considering only their local action on the stomach, we were to reflect on the powerful impressions made by them on several other organs, and particularly on several secreting organs; on the organs of the circulation and respiration, and on the nervous centres. An emetic might then, in our view of the matter, serve as a powerful stimulant, which, simultaneously changing the quality of several vital acts, might produce in the system a sudden modification, which, according to the cases pointed out by experience, might itself prove salutary or injurious.

SECTION IV.

TREATMENT BY TONICS AND STIMULANTS.

Forty of our patients were put under this treatment. Quinquina in every form; wine, camphor, musc, assafœtida, acetate of ammonia, æther, different aromatic distilled waters, were the different substances given to them. Several of them also had some beef-tea every day.

Of these forty patients so treated, there were twenty-six in whom the disease became worse, and terminated fatally. Among these patients there were some in whom, during the first days on which tonics were employed, an improvement was observed, which was, however, but temporary.

With respect to the other fourteen, their state was improved after they commenced the use of tonics; and the disease terminated favourably. But with reference to the share which the stimulant treatment might have on the cure, these fourteen persons must be divided into two classes: in the first we shall place those in whom a rapid improvement was observed from the time that tonics were given. Under the second class we include those who, very different from the former, experienced an improvement only gradually, as if the simple expectant method had been adopted. If it be admitted that the individuals of the first class owed the improvement which they felt to tonics, there can be no longer any doubt with respect to the individuals of the second class.

Thus in forty persons treated by tonics, we find twenty-six in whom the disease became worse, during the employment of these medicines; eleven on the contrary, in whom it was improved during the use of these same tonics, and only three in whom the improvement followed so closely on the commencement of the use of stimulants, that it seems reasonable to conclude that it was to this treatment the amendment was owing.

In the individuals treated with tonics, the different functional disturbances are in general aggravated, or improved, according as the disease itself is so modified. Thus with respect to the febrile disturbance, and nervous symptoms, we would only repeat what has been already stated in the preceding paragraphs.

The tongue returned to its natural state during the employment of tonics, in nine of our patients. This return was rapid in some; slow and progressive in the greater number. Whilst presenting its natural appearance, when we began to give tonics, it continued to present this appearance during their employment in four cases.

It became dry, red or black during the use of quinquina, and other tonics, or stimulant medicines, in fifteen patients. It presented remarkable alternations of dryness and moisture, of redness and paleness, in three other individuals. Dry, red, brown, or black, when tonics began to be given; it continued so in nine of the patients placed under our care. During the use of tonics, the diarrhœa ceased in three cases; it continued in seventeen, and came on in four cases.

During this same treatment meteorism ceased in five cases; it increased very much in one instance, and it continued in five cases, and made its appearance in three other cases, at the same time that the patients were submitted to a stimulant treatment.

We do not pretend to say that the resumé just given, accurately represents the opinion of medical men, with respect to the degree of advantage to be derived from tonics in the diseases treated of in this part of the work; we are only desirous that our observation should invite the attention of practitioners, and induce them to make new researches in reference to this subject: for we do not consider such a question finally settled; and certainly it is not by the mere data of pathological anatomy, that we can expect to solve it. Thus we see in another part of this work pneumonia treated with stimulants. Here it is no longer, from the sole consideration of the local lesion, that the indications are derived; the same may be said of a great number of other cases. Whatever importance, then, we may have attached, in *fevers*, to inflammation of the digestive passages, we cannot admit, that, in all cases, therapeutics should be entirely subordinate to this inflammation. This view of the matter was taken up, several years since, by M. Bouillaud, when, whilst he laid it down as certain, that the majority of what are called adynamic fevers, had their origin in an inflammatory state of the intestine, he advised the employment of chlorurets, to combat the consecutive changes which he admitted to exist in the blood. We have several times employed these chlorurets of late, and we must say that, in more than one case of bad typhoid fever, their employment has coincided, in the most striking manner, with a general improvement of the symptoms, and has been attended with the recovery of the patient *.

---

* The way in which we administered the chlorurets is as follows: we gave in each pot of ptisan from fifteen to twenty drops of chloruret of soda; we put half of this quantity into the draughts; we also gave from twenty-eight to thirty drops in the form of lavement; and we sprinkled this same liquid over the cataplasms with which we covered the abdomen. This is also the way in which the chlorurets have been administered by Professor Chomel, who was one of the first to employ them in the treatment of typhoid fevers.

ON DISEASES OF THE ABDOMEN.

CONTINUATION OF THE FIRST BOOK.

DISEASES OF THE DIGESTIVE TUBE.

SECTION II

DISEASES OF THE DIGESTIVE TUBE, IN WHICH THE LOCAL SYMPTOMS EXIST WITHOUT ANY OTHER SYMPTOMS, OR IN WHICH THEY WERE PREDOMINANT.

The cases reported in the first section presented to us several forms of gastro-intestinal inflammations, in which the general symptoms, either by their number or intensity, influence very much the local symptoms. In the present section this will no longer be so, and the cases which it contains are such that the seat of the disease is readily and clearly indicated by the seat of the symptoms.

CHAPTER I.

OBSERVATIONS ON ACUTE GASTRITIS.

For some years after the publication of M. Broussais' work on inflammation of the digestive passages, acute gastritis was considered by many physicians as a very common affection, and a number of acute diseases, widely differing from one another, were referred to it. However, more exact observation soon pointed out that acute inflammation of the stomach was not an affection so frequently met, and that in many cases its existence had been supposed gratuitously. This was the truth ; but men did not keep to it—a re-action in a contrary direction soon took place ; and some medical men went so far as to say, that acute gastritis, with the exception of that produced by corrosive poisons, was an inflammation so uncommon, that they had not as yet met with a single instance of it. However, in the former part of this work we have cited some cases in which the febrile disturbance and the symptoms of re-action towards the brain could be explained only by the inflammation, of which very evident traces were found in the stomach. The following cases, whilst they will further prove the real existence of this inflammation, will afford us an opportunity of studying it in its most important forms.

Case 1.—*Vomiting; pain in the epigastrium; tongue at first white, then red and dry, and afterwards covered with aphthous eruption—Continued fever—Death after thirty days' illness—Gastric mucous membrane red and friable.*

A woman, twenty-seven years of age, who had always enjoyed good health, suffered in the commencement of November, 1830, some domestic annoyances. From this time her digestion, which till then was good, became disturbed; she felt an acute pain in the epigastrium, and soon after every thing she swallowed was rejected. Five days passed on in this way; after this she took to bed, and then entered the Maison Royale de Santé. The following was her state at this time:—

Her countenance, which was generally pale, presented on each cheek a deep red patch; a black circle surrounded her eyes; she was very feeble, and spoke with a very faint voice. Within the last twenty-four hours she had vomited several times nearly a pint of bilious matter, which, during its passage, was intolerably bitter. All the drinks which she strove to take were immediately rejected. She constantly applied the hand to the epigastrium, and complained of a very acute pain in this part; the remainder of the abdomen was free from pain. There had been no stools for the last four days; the tongue was covered with a white coat, presenting beneath it a great number of red points, most apparent towards the anterior extremity of the organ. The patient complained of being tormented with severe thirst, which she did not venture to satisfy; the distress which accompanied each vomiting made her dread very much the return of it. The pulse was more than 112 per minute, and in the same space of time twenty-eight respirations were counted. The skin was hot and dry.

We considered this woman as labouring under acute inflammation of the stomach. We directed forty leeches to be applied over the epigastrium, the bleeding of which was encouraged by means of a warm bath. A weak infusion of mallow flowers was the only drink allowed.

On the following day there was some amendment; the vomiting had not ceased, but it was less frequent and less copious; the patient had been able to retain a little of the drink what she had taken; she suffered less in the pit of the stomach; still the fever continued.

During the eight hours following the state of the patient became alternately better and worse. But she never passed twenty-four hours without vomiting, sometimes bile, sometimes whitish mucus; occasionally, after efforts which lasted for more than half an hour, she threw up nothing but a liquid resembling white of egg. The pulse retained its frequency, and the epigastric pain always continued with variable intensity; the tongue retained the same appearance. We scarcely had been able to obtain a single stool, during all this time, by repeated lavements. Thirty leeches were a second time applied to the epigastrium, and several baths were given. After this time we tried the use of ice, but she could not bear it; Seltzer water, mixed with gum water, was not more successful; we were also obliged to give up different aromatic infusions, which we tried; she soon refused every thing, and would not consent to take any liquid but a little cold water, that seemed to agree best with her.

Still the state of debility went on increasing: she wasted away with frightful rapidity; towards the twentieth day the skin ceased to feel hot, but the pulse still retained its frequency. Towards this period we applied to the epigastrium a blister, on the surface of which we put some hydro-chlorate of morphine. The vomiting underwent no change from this application. Towards the twenty-sixth day the tongue lost the white coat with which it was covered, it became red and smooth over its entire surface. Towards the thirty-fourth day the tongue began to become covered with small white points, which soon become visible also on the inner surface of the cheeks and gums. These points, increasing in number, soon became converted into broad patches, which covered the tongue, like a confluent aphthous eruption, as also the inside of the mouth and the velum palati. The patient died towards the fortieth day. The vomiting had ceased three or four days before death.

Post mortem.—Beneath the whitish layer which covered the tongue and cheeks, the mucous membrane of these parts was intensely red. The pharynx and œsophagus were in a healthy state. The stomach, which was strongly contracted, was nearly the size of the transverse colon. Its inner suface, over nearly its entire extent, was of a brownish red. This colour had its exclusive seat in the mucous membrane, which had become in every part very thick, and was at the same time very friable. On its free surface there was discovered a multitude of small red or blackish points, which seemed to have their principal seat in the villi; however, beneath these the body of the mucous membrane was red, and as it were penetrated with blood; in no part could this membrane be detached, it gave way under the forceps, and in several points it resembled a pulp without any consistence. Such was the state of the mucous membrane of nearly the entire stomach, except near the pylorus, where it resumed its normal consistence, and where its colour was merely greyish. The remainder of the digestive tube was pale; neither patches nor isolated follicles were discovered in it.

The other organs presented nothing remarkable.

Here is a case wherein acute inflammation of the stomach presented itself free from any complication; and wherein, consequently, all the symptoms observed during life must be referred to it.

These symptoms were very marked; they pointed out, beyond all manner of doubt, both the seat and nature of the disease. During its continuance the circulation was disturbed; but that was the only sympathetic phenomenon which occurred; at first there was acceleration of the pulse and heat of skin, at one and the same time; but at a later period, according as the general debility increased, the skin returned to its ordinary temperature, and the disturbance of the circulation was no longer announced except by the frequency of the pulse. Here the febrile disturbance was evidently dependent on the morbid process going on in the stomach.

The different appearances presented by the tongue during the progress of the disease are deserving of attention. The thick white coat which covered it at first, might have made one mistake the real nature of the affection; but beneath this coat the tongue was intensely red; it was far from being pale at its circumference, and this was not one of those cases where the white coating of the tongue could be combatted by an emetic. However, according as the disease progressed, the tongue threw off the coat which covered it, and assumed a uniform red appearance. At a later period, again, it was attacked by an eruption, resembling that of aphthæ (muguet), and that was the prelude to the fatal termination. Thus, the different changes which the tongue underwent were directly proportioned to the constantly increasing severity of the disease; and however different the appearances were which this organ presented at different periods, they were all connected with an inflammatory state of the stomach.

We seldom see vomiting continue so long, and in so uniform a manner, as in this case. All the therapeutic means opposed to it were of no avail; they were not more effectual against this symptom, than against the disease itself which progressed and increased without ceasing, notwithstanding the active antiphlogistic treatment employed from its very first appearance.

Case 2.—*Vomiting; tongue red and dry; pain of epigastrium—Fever—Three weeks' illness—Redness and softening of the mucous membrane of the stomach.*

A woman, seventy-four years of age, entered the Pitié, October 25, 1832. Some days before her admission this woman had been seized with an acute pain in the pit of the stomach, and with vomiting. These symptoms came on without any known cause. When we saw her she was very weak. The tongue presented a uniform red colour, and it was very smooth on its surface. The patient, who was distressed with intense thirst, vomited all the drink she took; she complained of an intense pain in the epigastrium, which was increased by pressure; the rest of the abdomen was free from pain, and not tympanitic; no stool had taken place within the last three days; there was a slight cough; pulse was frequent, and skin hot. Twenty-five leeches were applied to the pit of the stomach. Gum water was ordered her.

During the following days the vomiting still continued; not only her drink was rejected, but occasionally she vomited, from time to time, with great effort and considerable distress, a small quantity of bile, sometimes yellow, and sometimes green. The vomiting of this bile was preceded by a sensation of burning at the xiphoid cartilage, and at the time when it was vomited the same sensation extended all along the œsophagus. The pulse, which was accelerated from the commencement, continually became smaller; emaciation and debility made rapid progress, and she died on the 11th of November, without presenting any new symptom. For the last few days before death, the tongue, which was intensely red, became very dry; the nausea and vomiting continued to the very last.

Post mortem.—Nothing remarkable in the pharynx or œsophagus. The stomach was strongly contracted, particularly towards the pyloric portion. A viscid, thready mucus, of a yellowish white colour, and very adherent to its parietes, lined its inner surface. Beneath this mucus, which was not removed without some difficulty, we found the mucous membrane, of a dark red colour, over the entire surface of the great cul-de-sac, and over all the posterior surface from the cardia to the pylorus. This redness penetrated the entire substance of the membrane, which had lost its consistence in every part where it was red; in some points it was merely a sort of pulp, which could no longer be raised with the forceps. Towards the anterior surface the mucous membrane presented a slate-coloured tint, without its consistence being much changed; near the pylorus some mammillation was observed. The different tissues subjacent to the mucous membrane were in the normal state, and there was a striking contrast between the perfect whiteness of the submucous cellular tissue, and the intense redness of the membrane which covered it. The small intestine contained in its upper part a yellowish liquid, which became reddish inferiorly. It presented considerable injection in several points. The large intestine was pale in general. The liver, which was of the ordinary size, was pale, and readily torn. The gall-bladder was distended with a great quantity of yellow bile, and in this was a calculus of an oval form, crystallized internally, the size of an almond. Each ovary was changed into a multilocular tumour, about the size of an egg. The cavity of the uterus was filled with a reddish liquid. Some calcareous concretions, surrounded by a black and indurated parenchyma, were discovered in the upper lobe of each lung. There were also some ossifications of the aorta.

The only organ in which we found any alteration after death was the stomach, and it was also to a gastritis that we had referred all the symptoms during life. These were nearly the same as in the first case; the vomiting continued with equal obstinacy, though not so profuse; the epigastric pain was equally intense; the tongue was red and dry from the commencement; it began by becoming covered with a white coat, as in the preceding case, but no trace of aphthæ appeared towards the termination, as we had observed in the former instance. In both the febrile disturbance was the same, and in both patients death was equally the consequence of the progressive debility into which the acute inflammation of the stomach had plunged them. It came on more promptly in the subject of the second case, who was much older than the first.

In the following case we shall again see acute inflammation terminate fatally, after having lasted from thirty-six to forty days; the anatomical lesion will still be the same, but there will be some difference in the symptoms.

CASE 3.—*Rheumatic affection at first; after some days, sudden disappearance of the articular pains, succeeded by intense pain in the epigastrium—Continuance of the latter, and of fever, for forty days—Vomiting only during the first few days; delirium towards the termination—Tongue at first white, then red and dry, and subsequently diphtherite—Redness and softening of the mucous membrane of the stomach.*

A woman, fifty-five years of age, of a tolerably good constitution, and subject to indigestion, was in good health when news were brought to her that one of her children had received a serious injury in one of the streets of Paris. She suppressed her grief, flew to its assistance, and for the remainder of the day did not appear ill; but she could not sleep the entire night; and on the next morning she was attacked with a violent fit of shivering, which was succeeded by burning heat. The latter continued for the entire day, and towards night several of the joints became swollen and painful. Three or four days passed on in this way, during which she presented all the symptoms of acute articular rheumatism, with fever. After this time, and without any active treatment having been employed, the swelling and pain of the joints ceased suddenly, but at the same time the patient felt an acute dragging pain in the pit of the stomach, for which leeches were applied to the epigastrium. The pain became less, but it did not disappear; for the five or six days following the patient kept to her bed, and continued to suffer from the pain in the stomach. She then entered the Pitié in the beginning of February, 1832. She was then twelve days ill. She had intense fever, and complained of pain in the epigastrium, which was increased by pressure; had distressing thirst, complete loss of appetite, but neither nausea nor vomiting; she had not been more than once or twice at stool for the last twelve days. The tongue, which was covered with a thick white coat, presented at the same time a number of bright red points at its apex and edges.

It appeared to us that the stomach was the original seat of the fever and the other symptoms. We ordered thirty leeches to the epigastrium; they bled very much. On the next day, however, there was no improvement. Pulse 120, skin burning hot, and the epigastric pain still continued. (Gum water, diet, lavement of marsh-mallow water).

During the twelve following days the state of the patient remained the same. After this she took a little broth and some dried prunes. On the day after this, light food was given. We had no reason to feel pleased at having yielded to the importunities of the patient, who pressed us to allow her food, not that she felt hungry, but because she thought that food would relieve the debility, which was every day increasing. The tongue, which till then had remained white and moist, threw off the coat with which it was covered; it was now become red and smooth; the thirst was as intense as on the preceding days, and the epigastric pain was now become more acute. The patient was now so weak, that at first we hesitated whether we should recur to another bleeding. We tried it, however, and twelve leeches were applied to the epigastrium.

It did not appear to us that either good or harm resulted fom this measure. On the day after we found the tongue equally red and dry; the frequency of the pulse was still the same. Nothing new was observed for the three or four days following. At the end of this time another symptom appeared; the patient began to vomit her drink, which came up mixed with a small quantity of yellowish bile; then the tongue, and all the inside of the mouth, became covered with white pellicles, which extended to the inner surface of the cheeks like broad pseudo-membranes, between which the mucous membrane was observed to be red and bleeding. This diphtheritic eruption coincided with increased debility; the features were altered; the pulse still continued frequent; some vomiting took place from time to time; wandering delirium came on; and death took place about forty-eight hours after her intellects began to be disturbed. Up to the last moment the stools were very scanty.

Post mortem. Pharynx and œsophagus healthy; mucous membrane of the stomach, on its two aspects, of a bright red colour, and softened, and also towards the great cul-de-sac; greyish mammillary appearance of this membrane towards the pylorus; slate-coloured tint of the duodenum, owing to the blackish colour of its villi; the same tint was found on the upper third of the jejunum. Nothing else remarkable.

The onset of this disease is well deserving of attention. The strong mental excitement, which may be considered as the occasional cause of its development did not at first act on the stomach; articular rheumatism declared itself, accompanied by intense fever. To judge from its acute form, it was probable that it would be of considerable duration, and that the tumefied and painful joints would return but slowly to their normal state. Such, however, was not the case. All at once, and before the usual time, the rheumatism completely disappeared; in a few hours all the joints once more became free, and at the same time, as if by a sort of metastasis, an acute pain developed itself in the stomach, and acute gastritis took the place of rheumatism. But, very different from the disease which it succeeded, its course was violent, it became more and more intense. The tongue presented, during its progress, the same changes as those noticed in one of the preceding cases. At first it was covered with a whitish coat, with red points at its edges, then with a uniform red colour, and ultimately became lined with false membranes, which gradually occupied the entire mouth.

Whilst in the preceding cases the vomiting had been one of the prevailing symptoms, had commenced with the disease, and had continued during its course, here, on the contrary, it was only at the latter period, and nearly at the same time as the diphtherite, that the vomiting appeared. This symptom, then, does not necessarily exist in every acute inflammation of the stomach, and when it does appear, it may, as in the present case, not accompany it in all its course. It is in general a very bad sign when it comes on at an advanced stage of the disease.

In this case, as in the two preceding cases, the epigastrium was the seat of an acute pain, which continued during the entire course of the disease. The gastric mucous membrane is not then as insensible as has been stated by some persons. Still, in consequence of the endless varieties of the sensibility of each individual, this membrane may be inflamed in a very high degree without the patient's experiencing any considerable pain in the epigastrium. We shall presently see an instance of this. There is no symptom necessarily connected with the disease which it indicates in very many cases, and there may be acute gastritis without vomiting and without pain, as there are instances of pleuritis without stitch in the side, and pneumonia without the rust-coloured expectoration.

This was the first time we observed any delirium, but it came on only towards the termination of the disease, at that period when all the vital acts become deteriorated, when the disturbance of the intellect so frequently precedes death by a few hours,

It may be well to observe, that, up to the time of the disappearance of the articular rheumatism, no active treatment was employed; and thus this affection disappeared altogether spontaneously, and that in so sudden and unexpected a manner, and passed, by a sort of *metastasis*, to the stomach.

We had an opportunity of meeting, in private practice, a case exactly similar to that just now reported. A lady, about sixty years old, having had all her life a stomach the susceptibility of which rendered it imperative on her to observe strict regimen, became very much exhausted in attending on one of her children who was dangerously ill. On a sudden she was attacked with fever and well-marked articular rheumatism. The delicate constitution of the patient, the debilitating causes which had acted on her, the mental distress which still annoyed her, induced us not to abstract any blood. This rheumatism continued for some days, then it disappeared all at once, and at the same time the epigastrium became painful, the tongue red, and the fever continued for the fifty days following. We observed precisely the same symptoms as those detailed in the preceding case, and at the end of this time she died. The body was not examined.

CASE 4.—*Severe cholera—During convalescence a re-appearance of the vomiting; redness and dryness of the tongue; acceleration of the pulse; redness and softening of the mucous membrane of the stomach.*

A young man, twenty-three years of age, entered the Pitié towards the middle of November, 1832, with all the symptoms of violent cholera; cyanosis existed to a very high degree, and the pulse at the wrist could scarcely be felt. (Ice and Seltzer water internally, narcotics in the form of lavement, rubefacients to the skin.) Such were the only means employed by us. After being forty-eight hours in the Pitié, all the bad symptoms ceased, and the person might be considered as bordering on convalescence. One day he obtained more food than we allowed; this brought on a fatal relapse. The day after this occurrence we found the patient in the following state:—

The eyes were again dull and sunk as when he had cholera; the tongue presented nothing particular; he was distressed with burning thirst; he had beside him a basin filled with the matters which he had vomited; the latter consisted in a great measure of ill-digested food; there was no pain in the epigastrium, nor in the rest of the abdomen; some liquid stools had taken place. The pulse was frequent, without the skin being hot. We trusted that it would be but an attack of mere indigestion, and we waited till the next day.

On the next day the state of the patient appeared more alarming. The vomiting, which had continued all the day, consisted of a greenish bile, not considerable in quantity; the tongue was red and dry, and still the epigastrium and remainder of the abdomen were free from pain; neither were there any alvine evacuations. Pulse 130, and the skin was burning hot. We had no doubt of the existence of gastritis, though the stomach was not the seat of any pain. We immediately prescribed thirty leeches to the epigastrium.

During the twenty-five days following the patient remained in a state of continued fever, with his tongue constantly red and dry. He had burning thirst, frequent nausea, and from time to time he vomited either a thready mucus, somewhat resembling the white of egg, or a yellow or greenish bile. The abdomen, including the epigastrium, was free from pain in all its points. There was obstinate constipation. The patient arrived rapidly at the last stage of marasmus; a large eschar formed on the sacrum; and he died, as if exhausted, without a struggle, and with his intellects perfect.

Post mortem. The stomach was strongly contracted on itself over its entire extent. It contained a small quantity of yellowish bile, and also a large lumbricus. Its parietes were lined by a layer of whitish mucus of a purulent appearance, and not viscid. Numerous bands, which interlaced with each other, appeared on its lower surface. The latter presented an extraordinary appearance

On a brownish ground there appeared a great number of bright red spots, which gave the mucous membrane a sort of spotted appearance. These spots, which were, on an average, about the size of a centime, consisted of a group of very fine curiously injected vessels ; there were sixty of these at least scattered over the inner surface of the stomach. Where these spots existed the mucous membrane was soft, and, as it were, pulpy ; between them it was thickened, and might be raised in large shreds. The valvulæ of the duodenum were considerably injected, as well as those of the commencement of the jejunum. On the remainder of the small intestine we found nothing else to notice, except a considerable number of Brunner's follicles, which were scattered over the lower third. These follicles were white, and not much developed. The large intestine was white, and contained some fæces.

In the other abdominal viscera we observed nothing else save a considerable enlargement of the spleen, the tissue of which was at the same time softened, and a greater friability of the parenchyma of the liver than was consistent with its normal state. This parenchyma was also of a pale red colour.

In the cranium and chest there was nothing remarkable, except one of the lymphatic glands, which was changed into a bony substance, and formed a slight tumour before the arch of the aorta.

During the epidemic cholera in Paris, in the summer of 1832, we saw many cases similar to the preceding. A great many persons, after having had different degrees of cholera, did not recover perfectly at once ; they remained for some time with difficult digestion, more or less acute pain in the epigastrium ; they also had nausea and vomiting. In several these symptoms ceased by little and little, and the health returned ; but in others the stomach became more and more diseased ; the vomiting became more frequent ; a period came on when all liquids were rejected by vomiting ; very often there were frequent vomitings of greenish bile every day ; the tongue seldom remained in its natural state ; being at first white and moist, it afterwards became dry. In all the cases which we saw there was continued febrile disturbance. The individuals fell rapidly into a state of marasmus, and they died at an interval of time which to us seemed to vary from between twenty-five days to three months. In those who died with this group of symptoms, and whose bodies were examined after death, we found traces of inflammation in the stomach[*]. In those who died at a period not remote from the commencement of the disease, we found the gastric mucous membrane red and softened ; in those who did not die till a later period, this membrane sometimes presented the same aspect ; sometimes it presented a brown or slate-coloured tint, and its tissue was thickened, and, as it were, indurated.

In such cases we have seen the most active antiphlogistic treatment completely fail, but still we feel convinced that it was the treatment on which most dependence could be placed, and we have not seen the other treatment employed, either by ourselves or by other practitioners, succeed better.

Case 5.—*Symptoms of acute gastritis—Death on the nineteenth day—Bright redness on the inner surface of the stomach, with softening of all the substance of its parietes.*

A young man, twenty-one years old, in the habitual enjoyment of good health, entered the Charité on March 22nd. Ten days previously he had lost all appetite. He was then seized with an acute pain in the epigastrium, and with nausea and vomiting. When he was placed under our care he had no longer any vomiting, but the epigastrium was painful on pressure ; the tongue, covered with a thick whitish coat at its centre, was of a bright red colour at its apex and edges. H complained of a burning thirst, and scarcely ventured to satisfy it, because the taking of drink increased the epigastric pains, and excited nausea. The pulse was very frequent, and the skin hot. He was bled to sixteen ounces.

---

[*] We shall presently cite cases where, with symptoms nearly similar, we found the stomach exempt from all appreciable lesion after death.

He was then in the eleventh day of the disease. From the eleventh to the twelfth day there was incessant vomiting. On the tenth day the features of the patient were as much altered as in cases of the most acute peritonitis ; he was in a state of indescribable distress ; his voice was quite gone, as in cholera ; the pulse constantly remained very frequent, but the heat of skin was gone. A large blister was placed on the epigastrium. On the seventeenth day the vomiting continued ; it was not large in quantity, but half an hour did not pass without the patient throwing up some mouthfuls of greenish bile. On the eighteenth day he was delirious. On the nineteenth countenance hippocratic, and extreme exhaustion. He died on the night of the nineteenth.

Post mortem. On raising the stomach for the purpose of examining it, we were astonished at seeing its parietes give way under our fingers without the slightest force being used. Over all the left portion of this viscus, its tunics, from the peritoneal to the mucous, had no longer any consistence ; they gave way under the finger like a sort of pulp. Wherever this softening existed, the parietes of the stomach were of a dark red colour, and, as it were, ecchymosed. This redness was very considerable on the inner surface of the organ. Near the pylorus the parietes of the stomach resumed their natural consistence, and in this part the mucous membrane had a greyish tint. Nothing remarkable in any other part.

This case differs from the four preceding it with respect to the nature of the alteration of which the stomach was the seat. The inflammation here was no longer confined to the mucous membrane ; it extended also to all the other tunics ; and the result was, a softening of the parietes of the stomach, resembling that observed by M. Cruveilhier in children, and described by him under the name of gelatiniform softening ; only, here the softening coincided with a very intense hyperæmia. The gastric inflammation was announced in this case during life by very well marked symptoms, similar to those pointed out in the preceding cases.

We met a case of softening of the stomach, entirely similar to that just described, in a young child to which sulphuret of potash had been given for the cure of croup. The disease yielded ; but the child did not ultimately recover its health. He died in a little time, after having presented continual vomiting as a prevailing symptom. The parietes of the stomach, through their entire extent, presented, in fact, nothing but a reddish pulp, which crumbled beneath the finger.

CASE 6.—*Constant vomiting for forty days—Ulceration of the stomach—Psoitis.*

A negress, thirty years of age, was in the habitual enjoyment of good health, when, forty days before entering the hospital Pitié, she was seized with pains in the epigastrium, which were never very acute, and with vomiting, which continued up to the time of her admission. Such was the only information which we could obtain regarding the previous history of the case.

When she came under our care (March 10th, 1832) she had reached the last stage of marasmus and debility ; she had fever ; her tongue was red and dry ; the vomiting had lessened ; she would take nothing but a few spoonsful of a solution of syrup of gum in water. She complained of no pain in the abdomen ; she continued lying on her back. This woman remained for ten days in the Pitié, and then died, having pined away gradually. Towards the termination of life she ceased to vomit ; her tongue continued red and dry to the last, and her pulse also continued frequent.

Post mortem. The internal surface of the stomach was white through its entire extent, and the mucous membrane was of the normal consistence. To the right, and in a line with the cardiac orifice, at the distance of about two inches from this orifice, there was an oblong ulcer, about six lines in length and three in breadth; on the edges of this ulcer the mucous membrane was not thickened, and the bottom of it was pale.

The remainder of the intestine was pale as the stomach. To the extent of a foot above the ileo-cæcal valve there were observed some of Peyer's patches, recognisable only by their black points. They formed no projection above the level of the intestinal surface. The colon was studded with a considerable number of Brunner's follicles, white as the mucous membrane which surrounded them. The liver was pale and soft; the spleen was small and soft. One of the calices of the left kidney was filled with pus. In the place of the psoas muscle of the left side there existed an immense collection of pus, in which the bodies of several of the vertebræ, divested of their periosteum, were bathed.

This is unquestionably a very remarkable case with respect both to the symptoms and to the morbid changes which occasioned them. An ulcer of trifling extent, which occupied but a few lines in the stomach, and no other alteration of this organ, not even any injected vessel through its entire extent; no change in the consistence of its mucous membrane; and yet, observe how severe the symptoms were with respect to the stomach; is there not reason to be astonished at the long-continued and obstinate vomiting, when we consider that ulcerations of the stomach, though of vast extent, and accompanied with many other organic lesions, oftentimes do not give rise to any vomiting? Nor can we avoid remarking the coincidence between the redness and dryness of the tongue with such a state of the stomach.

No doubt the profuse suppuration of the psoas muscle had a great share in the production of some of the symptoms; but though we may refer the fever and emaciation partly to this cause, we can scarcely allow that this suppuration was the cause of the vomiting.

What was the origin of the purulent matter found in one of the calices? Had it been secreted there? But no trace of inflammation was found around it. Was it conveyed there by absorption? This would not be the first time we found pus in the urine without any vestige of inflammation in the kidneys, ureters, or bladder, at the same time that there was a purulent collection in other points of the body.

CASE 7.—*Numerous ulcerations on the inner surface of the stomach—Diphtheritic eruption over the entire buccal mucous membrane—Pulmonary tubercles.*

A woman, twenty-six years of age, entered the Pitié, during the summer of 1832, with all the signs of pulmonary phthisis in a far advanced stage. During the last twenty days of its existence, the tongue, gums, lips, and cheeks, were covered with a whitish layer, resembling the eruption of aphthæ (muguet). The entire mouth was at the same time the seat of acute pain; there was a complete loss of appetite, burning thirst; the epigastrium was habitually painful. From time to time the patient had some nausea, but never any vomiting. She died on the 29th of June.

Post mortem.—The internal surface of the stomach was lined with a thick layer of brownish mucus, which closely adhered to the mucous membrane; the latter, through its entire extent, actually presented the appearance of a sieve, in consequence of a multitude of small ulcerations, all of the same form and the same size; they were exactly rounded, each being scarcely the size of a centime. The bottom of these was formed by the submucous cellular tissue, which still retained its natural whiteness and thickness. Beside these ulcerations there were observed some depressions, at the bottom of which the mucous membrane was still found reduced to a very fine web, and covered by a blackish matter, which seemed to be the detritus of the most superficial plane of the mucous membrane. Between these ulcerations and these vacuities, the mucous membrane retained its natural thickness and consistence; it was every where white, except towards the small curvature, to the extent of a five-franc piece, where some bright red points were observed.

The duodenum presented, on its inner surface, three black spots, which were formed of mucous membrane thickened, and as it were infiltrated, with a black substance, which towards the edges of each spot assumed a red tint. A little below these three spots, towards the union of the second and third curve of the duodenum, an ulcer was observed, which was still covered by some debris of the black substance just mentioned. Numerous ulcerations, through which tubercles were observed, were remarked on the lower third of the small intestine, in the cæcum, and at the commencement of the colon.

A brownish substance lined the œsophagus. The internal surface of this tube presented some longitudinal bands, where the epithelium was wanting; it was here principally, that the black matter was accumulated. Tubercles and cavities in the lungs. Traces of peritonitis, with numerous tubercles amidst false membranes. Liver pale, friable, and greasing the scalpel.

We have cited this case for the express purpose of pointing out the remarkable alteration which was found in the stomach. The numerous ulcerations observed on its internal surface, had probably been formed in each of the points where they existed by these black spots, some of which were still entire in the duodenum. What was their nature? Were they so many small eschars which had succeeded a multitude of small circumscribed inflammations of the mucous membrane, similar to those of which we had an instance in the fourth case? Observe also, that in several points the mucous membrane was destroyed only in its more superficial plane, in that which is principally formed of villi; these were replaced by the black substance already mentioned.

With respect to the symptoms, there were none connected with the stomach, except an habitual pain in the epigastrium. It is not certain that the affection of the mouth depended on the state of the stomach; and if it be true that we have more than once seen this affection develope itself in the last stage of acute or chronic gastritis, it is, on the other hand, equally true that we have found the stomach perfectly healthy in cases where the entire buccal mucous membrane had remained for a long time covered with patches of diphtherite.

CASE 8.—*Acute pain in the epigastrium; super-acute peritonuis--Perforation of the stomach.*

A woman, thirty years of age, labouring under pulmonary phthisis, continued to eat, and to digest tolerably well, though she for a long time had been troubled with diarrhœa. One day she complained of an acute pain in the epigastrium, and she had several attacks of vomiting; at first, she threw up her food, and then a considerable quantity of thready mucus and bile. Thirty hours passed on in this way; after which the entire abdomen became tense, and very painful to the touch, all the signs of acute peritonitis appeared, and the patient died rapidly.

Post mortem. A purulent liquid filled the cavity of the peritoneum, and membranous concretions covered the stomach and intestines. On raising the stomach we discovered on the posterior part of the great cul-de-sac, not far from the cardia, a perforation through which the index finger might be easily admitted. Around this perforation, the coats of the stomach were irregularly torn, softened, and as it were ecchymosed. All the inner surface of the great cul-de-sac was of a livid red colour, and its parietes were very friable. The mucous membrane of the stomach through the rest of its extent was very much injected.

Ulcerations at the end of the small intestines. Cavities in the lungs.

This is an instance of these solutions of continuity of the stomach, which several authors have described under the name of *spontaneous perforations*, and which seem to us to be nothing else than the result of a very acute inflammation of the stomach; all the coats are then found to be simultaneously affected, all are softened, and ulcerated at the same time, and after the lapse of a very short time the perforation may thus be completed. We have seen persons die in this way in a few hours, just as if a violent corrosive poison had been introduced into their stomach. It is remarkable enough that, in most of the cases of this kind which have been described, as also in those seen by ourselves, the perforation took place towards the great cul-de-sac.

CHAPTER II.

OBSERVATIONS ON CHRONIC GASTRITIS.

Under the generic term *chronic gastritis* we comprise several alterations which are usually described as diseases entirely of a distinct nature—such, for example, as cancer of the stomach. If, accordingly, these alterations appear to be very different from each other, with respect to their anatomical characters, they resemble each other, and become really confounded, both in regard to the symptoms which indicate their existence, and which no more appertain exclusively to the one than to the other; and also with respect to the nature of the occasional causes which give rise to them, and which are identical for all; and lastly, in reference to the treatment, which, likewise, should be the same for all. If then these different alterations should be distinguished from one another, in consideration not only of the varieties of their form and texture, but chiefly in consequence of their different degrees of curability, it is no less true, that, taken at their original seat, they all present one very important common element, namely, the irritation which precedes them in their development. The generic term *gastritis*, under which we comprehend such variable alterations of texture, appears to us useful only in so far as it expresses the general cause, and the common connexion of these alterations. But the question is not confined to this; after having seized the point in which these alterations approximate to each other—an important point, since with it is connected the treatment—it is necessary to discover the cause of their differences. These cannot be explained either by the intensity or duration of the irritation. It is even a remarkable circumstance, that the most serious alterations of texture are often those which are preceded or accompanied by the signs of the slightest irritation. What shall we conclude from this circumstance? This, that in order to account for effects so dissimilar, we shall be forced to admit certain predisposing causes peculiar to each of them, and to acknowledge, that irritation no longer acts, except as a simple occasional cause, which of itself would be unable to produce any of the alterations. If this be so, what can be the effect of the antiphlogistic treatment? It combats only this occasional cause; but it does not at all destroy the predisposing cause, which, once the irritation is produced, gives rise, according to its nature, to the most varied lesions. Thence the frequent inefficacy of this treatment, which attacks only one of the elements of the disease, and which does not at all destroy the unknown cause, under the influence of which the irritation itself comes on. We would not consider it unreasonable to maintain that in certain cases the unusual afflux of blood by which the irritation is made manifest takes place in an organ only because there already exists in this organ a morbid predisposition, which draws more blood to it than in the natural state, so that a secretion, or a morbid nutrition, comes to be established in its tissue. We see, then, how secondary a part sanguineous congestion performs in such cases, and how, by admitting it, we are still far from having penetrated the essence of the phenomena. It would be a strange mistake to suppose, that, by it, we could account for the formation of different organic alterations, and explain their numberless varieties. Thus, when the embryo is developed, the afflux of blood into the tissue of the different organs is a condition of the formation of the latter, it is the common element which we shall find for all organic formation; but it is not this afflux of blood which determines the special nature of each organ, its chemical composition, its anatomical arrangement, and its vital properties. Thus, every secretion recognizes this same afflux as a condition of its existence; but it is not by the mere increased quantity of the blood, and by the mere excitement occasioned by it in the organ which receives it, that we can explain why each gland secretes a peculiar liquid.

We entreat the reader not to lose sight of these considerations; if he reflect attentively on them, we trust he will not reproach us with having combined alterations which seem so different from each other, under the common term of *chronic gastritis;* this term we use merely as a sort of general expression, under which is ranged every organic affection of the stomach, against which the antiphlogistic treatment seems to succeed better than any other.

Let us endeavour then to show, either by anatomy, or by the study of the symptoms, how certain organic or functional lesions succeed each other, and are linked together in the stomach, the nature of which was for so long a time mistaken because their description was given separate, medical men being persuaded that each of these lesions constituted a disease in itself.

ARTICLE I.

ALTERATIONS PRODUCED IN THE STOMACH BY CHRONIC GASTRITIS.

These alterations are as numerous as they are varied; they are so much the more important to be known, inasmuch as, though it often happens that different as they are, they give rise to the same functional disturbances, they at other times produce symptoms which vary with them. In more than one case may we explain the equally certain success of opposite modes of treatment by the difference of the lesions, of which the stomach, when in a state of chronic inflammation, has become the seat.

SECTION I.

ALTERATIONS OF THE MUCOUS MEMBRANE.

In the great majority of cases of chronic gastritis, anatomy proves the existence of varied and more or less considerable alterations in the mucous membrane of the stomach. Sometimes, however, this membrane appears to have retained its healthy state, or at least it is certain, that if it underwent any alteration, this alteration entirely escapes anatomical inspection. Thus, through its entire extent it presents the white colour which constitutes its normal state; in every part, also, it presents its ordinary consistence; it is neither softened nor indurated; in no part of it, in a word, does its substance appear to be either increased, or diminished. But then we observe beneath the healthy mucous membrane, different and very striking affections of subjacent tissues, and particularly of the cellular tissue extended in the form of a dense and whitish membrane between the villous coat of the stomach and its muscular coat. Here, however, a question presents itself: though the mucous membrane may appear perfectly healthy at the time, has it been always been so? was there not a stage of the disease at which it was affected, and should we not even suppose, that, in most instances, it is in the mucous membrane that the chronic affection has commenced, of which we no longer find any traces, except in the tissues placed beneath it? In order to solve this question, which is important, with respect to the etiology of the disease, and to its treatment, let us first interrogate analogy.

When a membranous or parenchymatous tissue is attacked with inflammation, sometimes the parts in contact with this tissue remain unaffected by the morbid process, sometimes they participate in it. If the latter be the case, it often happens that, in the tissue primarily affected, particularly if it possess a considerable share of vitality, the inflammation becomes resolved, whilst it continues and passes into the chronic state in the tissues, which were but secondarily affected; this happens particularly when, in the latter tissues, the vital properties are less active and less energetic than in the tissue which was first attacked by inflammation. In support of these assertions very many instances present themselves. I shall cite some. A person becomes attacked with enteritis or colitis; if he dies in the acute stage, we find only the mucous membrane affected, either merely red, or softened, or ulcerated, etc.; if the patient does not die till after a longer time, after the inflammation has taken on a chronic form, the intestine may present three different states:—first, the inflammation may be limited solely to the mucous membrane; secondly, simultaneously with this membrane, the tissues subjacent to it may have undergone different alterations, the result no doubt of the inflammation which has attacked them; but sometimes the mucous membrane and the subjacent tissues seem to be almost equally diseased, sometimes the latter seem to be much more so; and cases may even present themselves in which the alteration of the mucous membrane, escaping observation at first, can be discovered only by attentive examination. Thus, this membrane, though white, is softened, and is, as it were, pulpy in several points; at other times it presents a grey, brown, or black colour, arranged in simple points, isolated or aggregated, in round patches, sinuous lines, long bands, etc.; at other times it presents superficial ulcerations, white as the rest of the membrane, the bottom of which is on a level with the edges, and which are evidently progressing towards complete cicatrization. We now observe here only the remains or vestiges of the inflammation of the mucous membrane; but this white softening, this form of ulceration, proves that more intense inflammation has existed in this membrane; in fact, it is these same lesions which are found in persons who have died accidentally during convalescence from acute gastro-enteritis; that is, at a period when one should no longer find in the intestinal canal any thing but the remains of an inflammation which had been much more severe there, it is again these same forms of lesion which are found in the buccal or pharyngeal mucous membrane, when the inflammation, of which it had been the seat, is tending to resolution, when the ulcerations, with which it had been covered, are beginning to cicatrise. Thus then it seems very probable, that in the case now in question, the mucous membrane was much more seriously affected than it is now found, and that the inflammation, of which it was the seat, still continuing in the subjacent tissues, is progressing towards complete resolution; thirdly, from what has been just said, it is easy to conceive that cases may present themselves, in which these last traces of inflammation of the mucous membrane shall have completely disappeared, and where it will seem to be perfectly healthy at the same time that the tissue subjacent to it are more or less severely disorganized. Nor is this third case very uncommon.

In the pulmonary mucous membrane we may observe the same succession of phenomena. Thus in acute bronchitis the mucous membrane alone seems to be affected; in chronic bronchitis there is a degree of it in which we observe, at one and the same time, alterations, more or less varied, of the mucous membrane, and very remarkable lesions of the subjacent tissues, particularly thickening of the mucous membrane, and hypertrophy of the cartilaginous rings. Again, there is another degree of it in which the mucous membrane has recovered its healthy state, at least apparently so, and where we only perceive an alteration of the other tunics of the air tubes. Cases of this kind have been already cited*.

If these examples were not sufficient to prove that, in a great number of cases at least, the alteration of the tissues subjacent to the mucous membrane has its origin in an inflammation of these membranes, which may still continue, and which has completely disappeared, I might still cite other cases in which this succession of phenomena may be, in some measure, appreciated by the finger and the eye. Thus, after more or less intense inflammation of the conjunctiva, and when this membrane has recovered its natural whiteness and transparence, the cellular tissue which connects it to the sclerotic, may continue inflamed, infiltrated with pus, be thickened, and become the seat of various morbid changes. Thus, in persons who formerly had gonorrhœa, and in whom the urethra has become contracted in various parts, the mucous membrane has been found perfectly healthy, but the cellular tissue beneath it is thickened and indurated. It is in this way, also, that in certain individuals, who have for a long time had a chronic inflammation of part of the skin—who, for instance, have had sores on the legs—the cellular tissue subjacent to the diseased portions of the skin is also inflamed, and retains a scirrhous hardness as it were, long after all traces of inflammation have disappeared from the skin. I might again cite cases of acute or chronic inflammation of the serous or synovial membranes, in which these membranes having returned to a perfectly healthy state, there have been found in the subjacent cellular tissue traces of chronic inflammation, such as induration, scirrhous thickening, fibrous or cartilaginous transformation, etc.

Reasoning then from analogy, we might be inclined to admit, that the kind of law which we have proved to exist with respect to the intestinal canal, the air passages in the mucous membrane of the eye, in that of the urethra, in the skin, in the serous and synovial tissues, exists also with respect to the stomach; that is, the inflammation of which we no longer find any traces except in the tissues subjacent to the mucous membrane of this organ, primarily existed in this mucous membrane. But further, for the stomach, as for the other organs in question, this proposition may be demonstrated by direct proofs. Thus, in the mucous membrane of the stomach, as in that of the intestine, I have been able more than once to trace the gradation of the inflammation, and to ascertain, with more or less exactness, the different stages through which the mucous membrane passed, if I may so say, in order to return from the morbid to the healthy state. Thus, at the same time that different alterations of the subjacent tunics existed, I sometimes found the mucous membrane red, thickened, softened, occasionally ulcerated; sometimes these traces of inflammation of the mucous membrane were much less evident: it was, for instance, soft, but white; sometimes it was very evident, from the nature of the changes, that the mucous membrane had been much more diseased than it appeared to be at the time the examination was made. In one case, for instance, which I saw at the Charité, with my friend and colleague, M. Reynaud, we found the internal surface of the stomach white through its entire extent; towards the pylorus there was evident induration of the submucous cellular tissue, with hypertrophy of the muscular membrane. These tissues, as they proceeded from the pylorus, resumed their healthy appearance; then, towards the middle of the stomach, the parietes of this organ presented a new thickening, a cartilaginous sort of hardness; this induration resided solely in the different tissues subjacent to the mucous membrane; over the entire extent of this thickening, which was about equal to a five-franc piece, the mucous membrane itself no longer existed. The result of this was an ulceration so superficial, with white edges, and the bottom equally white, and on a level with the edges, that it was not perceptible at the first glance. The bottom was formed of cellular tissue considerably thickened. The individual in whom this morbid change was found, had experienced, three years before, all the symptoms of acute gastritis, such as pain in the epigastrium, with fever, vomiting, ardent thirst, etc. These symptoms gradually improved; but from this period the patient continued to labour under painful digestion, and from time to time his food was thrown up. Chronic peritonitis contributed to accelerate his death.

---

* See the parts of this work which treat of diseases of the chest.

Very probably there was a period when the solution of continuity of the mucous membrane in this individual had presented characters in some measure more inflammatory than those discovered when the body was opened; very probably, around this solution of continuity, the mucous membrane had been more or less inflamed. The ulceration appeared to progress towards cicatrization; after some time still the mucous membrane would probably have been found white and healthy above the thickening of the middle part of the stomach, as it was found white and healthy above the thickening near the pylorus. If, however, from the mere examination after death, there could still be a doubt that the inflammation of the mucous membrane had been in this case the original affection, and that it had existed previously to the alterations of the other tunics, and that the lesions which it presented were, in some measure, but the vestiges of more serious lesions, we would appeal to any other source of information, we would interrogate the symptoms; and from their order of succession we would draw the inevitable conclusion, that the tissue primarily inflamed was the mucous membrane (first stage of the disease; gastritis in the acute form); that, subsequently, the inflammation of this membrane became less intense (cessation of the fever and of the epigastric pain); that it continued, however, at the same time that the subjacent tissues became consecutively diseased (difficulty of digestion; habitual anorexia; vomiting becoming more and more infrequent).

Lastly, when the mucous membrane of the stomach has recovered its whiteness and natural consistence, and when there is at the same time induration of the subjacent tissues, should we, in all cases, consider this membrane as returned to its perfectly normal state? Observe, that in several of these cases where the mucous membrane appears perfectly healthy to the eye of the anatomist, digestion continues painful and laborious, such as it exists in persons whose mucous membrane presents, after death, more or less marked traces of chronic inflammation. It seems, then, that in cases of this kind the mucous membrane recovers the appearance which, at least as far as our feeble means of investigation go, constitutes its normal state, before it recovers the integrity of its functions; it seems there is a period when this membrane is no longer inflamed, but when it has not yet the power of producing on the food that modification which should convert it into chyme, whatever be the physical, chemical, or vital process by which this change is effected. It is, moreover, not in the mucous membrane of the stomach only that we shall find instances of tissues, which, after having been the seat of inflammation more or less evident, have recovered a healthy appearance, whose functions are still, however, considerably altered. Thus, in some persons who presented during life all the symptoms of chronic bronchitis, with copious purulent expectoration, I found the mucous membrane of the larynx, trachea, and bronchi, white, and to all appearance healthy. From mere anatomical inspection one would not have hesitated to admit that this membrane was perfectly healthy; and yet the copious puriform secretion, of which it was the seat, proved its pathological condition.

The healthy appearance, at least apparently so, of the mucous membrane of the stomach in cases of chronic gastritis, is, however, rather a rare circumstance, and most frequently it presents different changes with respect to its colour, consistence, thickness, and form. These varied alterations may exist separate, or combined. Thus, at the same time that the mucous membrane is red and brown, it may be indurated or softened, hypertrophied or attenuated, etc. At other times, some one or other of these alterations may present itself alone ; there may be, for instance, mere change of colour ; at other times, a thing more remarkable, the consistence of the mucous membrane is found to be considerably diminished, without its colour having undergone any change.

Are the changes which the inflamed mucous membrane undergoes in its colour different in acute and in chronic inflammation of the stomach? There are some shades of colour which belong equally to these two states ; there are others which denote more particularly the existence of a chronic inflammation.

The shades of colour which principally belong to chronic gastritis are the grey slate-colour, the brown colour, and, lastly, the more or less deep black colour. I do not mean to say that these different tints may not also be found in some cases of very acute inflammation; they have been sometimes produced by Professor Orfila in animals, into whose stomach this learned and skilful experimentalist had introduced irritating substances. In the human subject there are, I think, very few instances of the grey slate-colour, or of the brown or black colour, being found in stomachs affected with acute inflammation ; nothing, on the contrary, is more common in chronic gastritis. It is probable, that in the human subject, as well as in those animals experimented on by M. Orfila, the acute inflammation was chiefly observed with these shades of colour only in cases of poisoning by acrid or corrosive substances; that is to say, in cases where the inflammation of the stomach having in some measure attained its most acute form, tends to produce rapid disorganization of the mucous membrane.

It seems to me remarkable enough that the same colouring is observed in the two extremes, if I may so say, of gastritis ; namely, in super-acute inflammation, which proves fatal very rapidly, and in chronic inflammation, which oftentimes indicates its existence by very slight symptoms. This is the fact, such as experience presents it to us. In order to explain it, it would be necessary accurately to know what is the cause of the brown, grey slate-colour, etc., which the mucous membrane of the stomach presents, both in the case of super-acute gastritis, and more frequently still in the case of chronic gastritis. Now, on this point we can only form mere conjecture, which rests on such facts as these : Hunter, long ago, proved that every time arterial blood is arrested, or even merely retarded in its course, it takes on the colour of venous blood. Thus, for instance, if we open an artery in an animal, in a portion of the vessel previously intercepted between two ligatures, black blood issues from it, resembling venous blood. Hunter has also remarked, that the blood which comes from a divided artery, and which is effused into the surrounding cellular tissue, also becomes black on coagulating there. This same black colouring is also found in the blood of the majority of the cases of cerebral apoplexy, and in that of pulmonary apoplexy. Unless it be supposed, a thing not at all probable, that in these hemorrhages veins only supply the blood, it must be admitted, that in the brain and lung, the blood, red at the time when the effusions take place, subsequently acquired the black colour which it presents. Can we in a similar manner explain the brown or black colouring of the mucous membrane of the stomach in a certain number of cases of gastritis? For this purpose it is necessary that experience should have ascertained, that there are cases wherein the blood in an inflamed part circulates more slowly than in the same part when healthy, and wherein it even has a tendency actually to stagnate in this inflamed part. Now, this retardation of the circulation of the blood in an inflamed tissue has been proved by the experiments of Dr. Wilson Philip. An inflammation being produced in the cellular tissue of a frog's thigh, in the fin of a fish, or in the mesentery of a rabbit, the microscope, says Dr. W. Philip, soon shows that the motion of the globules of the blood, which is ordinarily so rapid, is perceptibly retarded, it seems to be even altogether suspended in the part where the inflammation appears most intense. If then it is proved, on the one hand, that under certain circumstances the blood circulates less rapidly, or is even arrested in an inflamed part; if it is proved, on the other hand, that the blood has a tendency to become dark when the circulation is languid or suspended, it will not seem unreasonable to explain in this way the brown colour of the mucous membrane of the stomach in certain cases of gastritis. But why was it observed, as I said awhile ago, only in the two extremes, in super-acute inflammation, and in chronic inflammation? It is for this precise reason, because in these two extremes stagnation of the blood more or less complete must take place, principally in the gastric mucous membrane. Thus, in super-acute inflammation, from the extreme and sudden dilatation of the vessels considerable embarrassment of the circulation must result, a sort of strangulation, the effect of which will be obstruction of the capillaries; and then, consecutively to this obstruction, the coagulation of the blood can be observed in the artery which goes to the inflamed part, in the same way as the blood is seen to coagulate in a vein below the place where the vessel is compressed. Thence the termination of the inflammation in gangrene may be the result; in this latter termination, accordingly, the coagulation of the blood in the arteries has been frequently observed, but this coagulation was considered as consecutive to the gangrene, whilst, from what has been now stated, I should be disposed, on the contrary, to think that the coagulation of the blood in the artery precedes this gangrene, and that the latter phenomenon is but the necessary result of it.

In chronic inflammation there will no longer be a complete stagnation of the blood, as in the super-acute inflammation just mentioned; in this chronic inflammation also the mucous membrane will not present so black a colour, but only a grey-slate or brown colour, which will itself be more or less striking, according to the greater or less retardation of the circulation of the blood. Now it seems this retardation must exist every time the vessels of the inflamed part have undergone considerable dilatation; a dilatation which should be particularly marked in cases of chronic inflammation. This retardation of the blood in a part whose capillary vessels have been considerably dilated is the result of that law of hydro-dynamics, in virtue of which the course of any liquid whatsoever must be retarded, when flowing on in full tubes it passes from a narrower into a broader part; this is one of the causes why in the normal state the blood circulates less rapidly in the capillaries; we may readily conceive then, that it will circulate more slowly if the diameter of these numberless vessels come to be accidentally increased.

The dilatation of the vessels may also continue after the inflammation has ceased, and with it the brown colour must also continne. Indeed, independently of all explanation, it seems that in some cases this colour continues in a part formerly inflamed, but which is no longer so. There can be no doubt of this with respect to the skin; we frequently see the skin around ulcers, which have cicatrized, and have been for a long time perfectly healed, still retain, to a greater or less extent, the more or less deep brown red colour. Analogy seems to lead us to admit, that in some cases, that which takes place in the skin, may also take place for certain portions of mucous membrane, and particularly the gastric mucous membrane.

It is at present so generally admitted that the different colours now mentioned are the result of inflammation, and particularly of chronic inflammation, that I do not consider it necessary to dwell on the proof. However, if any persons could still doubt that the slate-colour, or the brown or blackish tints of the internal surface of the stomach indicates a chronic inflammation of this organ, I would submit the following facts to their consideration.

First. If the symptoms manifested during life by those persons whose stomach presents after death one of the tints now in question, be carefully observed, it will be found invariably that these persons have had symptoms of chronic gastritis; such at least is the result of a great number of cases collected by me at the Charité. But it frequently happens that these symptoms escape an inattentive examination, either because they are really but little striking, or particularly because chronic gastritis frequently comes on only as a complication of another disease, which engages attention more or less exclusively. It has perhaps been too often said, that organic lesions, more or less severe, could exist without producing any symptoms. But how many of these lesions might have ceased to be latent, if, during life, all the functions had been the object of a scrupulous and patient examination!

Secondly. In the majority of cases, at the same time that the colour of the mucous membrane has undergone one of the modifications pointed out, it also presents other changes, which cannot be denied to be the results of inflammation: thus it is thickened, hard, covered with vegetations, etc.; beneath it the other coats of the stomach also present occasionally traces of inflammation, more or less intense. If the co-existence of these different alterations and of the brown colour of the mucous membrane is the most general case; if, on the contrary, this change of colour, without any other lesion, is much less frequently observed, we shall naturally be inclined to admit by analogy that, even when it exists alone, it is the result then also of an inflammatory process.

Thirdly. In certain cases of ulceration of the stomach, and more frequently in ulceration of the rest of the intestinal canal, the edges of these ulcers are found to be either of a grey-slate colour, or of a more or less dark brown. Now, where an ulceration exists, the existence of inflammation cannot be questioned. If the brown colour of the edges of the ulcer depended on any other cause than inflammation, why should it exist only around the ulceration? Why should we see it decrease and disappear in the intervals between the ulcerations? Again; you will find this same brown or black tint colouring the edges of some ulcerations of arteries; and here, as in the digestive canal, you will see the change of colour occupy only the circumference of the ulcerations, and between them the inner surface of the artery will resume its white colour.

Fourthly. It is not to putrefaction that the slate-colour, brown tinge, etc., of the mucous membrane of the stomach can be attributed; for more than once I have opened bodies in different degrees of putrefaction, and found the internal surface of the stomach and intestines presenting a livid red tint, either uniformly diffused, or arranged in patches, striæ, or bands. This reddish tint was probably the result of the transudation of the colouring matter of the blood through the vascular parietes, similar to the transudation of bile, which takes place more promptly through the gall-bladder. But whatever was the degree of putrefaction, whether slightly or very far advanced, I never saw any tint resembling the slate-colour or brown-colour of chronic gastritis.

It has been stated that this particular tint should be considered in the majority of cases as the result of the colouring of the mucous membrane by the gases contained in the stomach or intestines. This colouring is attributed chiefly to sulphuretted hydrogen gas; but in the stomach where the existence of this gas has never been proved, the brown colour is very frequently observed. Besides, there is no proof that sulphuretted hydrogen, or any other gas, possesses the property of imparting a brown or black colour to the animal tissues.

Until a series of gases have been inclosed in portions of the intestines, and trial is made whether these portions become coloured or not, the assertion in question should only be considered as a mere supposition.

The brown tint which the mucous membrane of the stomach presents when in a state of chronic inflammation, affords numerous varieties with respect to its arrangement and its extent. With respect to its arrangement, it is sometimes found circumscribed within a small number of points, forming as it were isolated spots, which may be round, or more or less irregular. In the interval between these grey, brown, or black spots, the mucous membrane may remain more or less white. In consequence of their exact circumscription and well defined colour, one would often say, that where these spots exist, a drop of colouring matter, more or less brown, was deposited. Sometimes in spots of this kind there is perceived merely a uniform tint; sometimes the naked eye, or by means of a lens, discovers that they are formed of an assemblage of vessels of an infinitely small diameter, which are themselves filled with black blood. These spots constitute so many small inflammations, circumscribed like the red spots, frequently observed in cases of acute gastritis.

Instead of the simple spots just described, the mucous membrane may present either brown patches of greater or less breadth or bands, striæ or lines of the same colour; in fine it may present a uniformly brown or blackish tint in the fourth, the half, or even over the entire, of its extent.

Anatomists do not as yet seem to have particularly noticed a variety of black colour seldom presented by the stomach, but much more frequently by the small intestine. The internal surface of the latter then seems as it were studded with myriads of small black points of almost microscopic minuteness, which, according as they are more or less numerous, may give a more or less marked black tint to the entire intestinal surface. These black points are very different in their appearance from another species of black points, separate or aggregate, long since noticed by Peyer, and which appertain to follicles. If we examine those in question with the lens, we see that they occupy the summit, and more rarely the entire extent of filaments or plates, which are nothing else but the intestinal villi. It is clear that if this species of black points be met with less frequently in the stomach than in the small intestines, it is, because in the stomach the villi are less marked and less numerous. By an attentive examination with the lens, the intestine being covered twith a thin layer of water, we may satisfy ourselves that these myriads of black points, are the result of a very fine vascular injection of the intestinal villi. Some facts induce me to think, that the black injection of these villi, which renders them so apparent, is most frequently connected with a state of chronic inflammation of the small intestine. In several cases of diarrhœa of long standing, I found no other alteration than such a colour in the intestines.

If in all cases of chronic gastritis the colour of the mucous membrane presented itself as it has been now described, one might always discover, by merely inspecting the stomach, whether the inflammation took on an acute or chronic course, since we have seen that it is in a very small number of cases of super-acute gastritis, such as those produced by poisoning, that the mucous membrane presents a more or less deep brown colour, and with the exception of these very rare cases, the brown colour indicates a chronic gastritis. But what is very important to know, is, that very often when the stomach is in a state of chronic inflammation, its mucous membrane is neither slate-coloured, nor brown, nor black, but presents a red colour, more or less perfectly similar to the red colour of acute inflammation. Very recently we opened in the Charité the body of a young man, who for upwards of eight months before his death presented all the symptoms of chronic gastritis, such as vomiting, sense of weight in the epigastrium after taking food, complete anorexia; the state of the tongue moreover was natural, a circumstance as common in chronic gastritis as it is uncommon in acute gastritis. In this individual the mucous membrane of the stomach was found to be of a bright red colour over a great part of its extent. In other individuals, who had presented the same symptoms, I found a brown colouring of the entire mucous membrane. One of the most prominent symptoms, vomiting, may also be absent, both in the case of red colouring and that of brown colouring. We do not mean to lay it down that gastritis, with bright redness of the mucous membrane, is an acute inflammation prolonged to an indefinite length, and that in really chronic inflammation there is a brown colouring of this membrane. We know that in both cases the same symptoms may manifest themselves; but it is very possible that in these two cases the treament should be different. We think that in the former case, however long the disease may have existed, means exclusively antiphlogistic, and a mild regimen, are alone suitable; whilst the second case, on the contrary, is probably one of those in which it may be well to have recourse both to medicinal substances of a more or less stimulating nature, and to a less mild regimen.

Should we again refer to a chronic inflammation of the stomach another shade of colour of its mucous membrane, in which this tissue instead of being either red or brown, is on the contrary of a dull white, milk-like colour, a colour widely different from the species of white tint, which seems to constitute its normal state? I think we should still refer to a chronic gastritis this remarkable modification of the colour of the mucous membrane. In fact, first I have found this colour always combined with other alterations which unequivocally indicated the existence of an inflammation, such as thickening and induration of the membrane; secondly, other inflamed tissues also present a tint of a duller white than is natural to them. Such is the case of the thickened and indurated cellular tissue which surrounds old ulcers; such also is the case of the serous membranes covered by membraniform productions, which having been at first soft and red, have gradually become indurated, and have at the same time acquired a very remarkable milky whiteness. Who has not seen such spots or white patches in the pericardium, in the arachnoid, or in the pleura? Observe carefully through what stages the inflammation has passed, in order to produce this unusual whiteness in the cellular tissue and in the serous membranes; you will find the same stages and degrees in inflammation of mucous membranes; analogy will lead you then to admit, that in this last tissue, as in the others, the white colour of a duller character than in the normal state may be considered as a result of inflammation.

Thirdly. Again, in persons who had presented all the symptoms of the best defined chronic gastritis, the stomach has presented no other remarkable lesion except large patches, in which the mucous membrane was harder and thicker, and at the same time of an evidently duller white than in the rest of its extent. In one case particularly, recently observed at the Charité, the local and general symptoms were so marked, that we actually believed the case to be one of what is called a cancerous affection of the stomach; the patient had several times vomited black matter, resembling coffee-grounds. Well! the stomach presented nothing but a milky white patch towards its centre, a little broader than the palm of the hand, with hardening and manifest thickening of the mucous membrane, in that part only where this unusual white tint existed. This tint was, moreover, marked in several points by red spots, the result of partial vascular injections; and further, in every part where this same milky tint existed, the mucous membrane was covered by a membraniform layer, of a dull white colour like itself, a species of exudation almost solidified, bearing some resemblance to the epidermis, which terminates around the cardia, when this epidermis, thicker than usual, forms a contrast by its whiteness and its inorganic appearance with the mucous membrane of the stomach, which beneath it becomes continuous with that of the œsophagus.

At other times, the milky white tint which we are now considering, coincides with a state of puffiness and softening of the mucous membrane; it is as it were furrowed with vessels; red spots are observed on it: this state strongly resembles that which has been described by anatomists under the name of soft cancer of the mucous membranes; it is, in my opinion, only one of the infinitely varying modifications which chronic inflammation may cause the mucous membrane of the stomach to undergo. This assertion appears to me the legitimate consequence of the facts already stated.

In almost all cases wherein the stomach has been the seat of an inflammation of long duration, post mortem examination proves that the consistence of the mucous membrane has undergone more or less perceptible modification. Sometimes this consistence is increased; sometimes, on the contrary, it has suffered considerable diminution: in the former case there is *induration*, and in the latter *softening* of the membrane.

Induration of the mucous membrane of the stomach is one of the best anatomical characters by the help of which chronic gastritis may be distinguished from acute gastritis; and what we say here with respect to the inner coat of the stomach, may apply to all the membranous or parenchymatous tissues. In all acute inflammation produces several lesions, which do not differ from those to which chronic inflammation may also give rise. Thus, for instance, in mucous membranes softening may be observed, whether the inflammation has proceeded slowly or rapidly. Induration, on the contrary, belongs exclusively to chronic inflammation.

Induration of the gastric mucous membrane may be general or partial:—

It may exist, first, with the natural colour of the membrane, as is observed in the case of old inflammation of the skin or cellular tissue; secondly, with the mucous membrane of a duller white than exists in the normal state; we have already noticed this case; thirdly, with a greyish colour, or a more or less deep brown colour. I have never seen induration, which we must not confound with simple thickening, accompanied by a bright red colour of the mucous membrane.

Induration of the mucous membrane of the stomach, though common enough, is observed still less frequently than its softening. The latter is unquestionably one of the most frequent changes observed in the stomach of individuals who die in the hospitals of different chronic diseases. If then, as I have elsewhere endeavoured to prove, softening of the mucous membrane of the stomach is often the result of its inflammation, we must conclude from this, that gastritis, whether acute or chronic, is a very frequent disease; whether it exists as a principal affection, or comes on only consecutively, and as a complication.

Considered in reference to its thickness, the mucous membrane of the stomach, when in a state of chronic inflammation, may present itself under three forms; first, it may have retained its natural thickness; secondly, the thickness may be more or less perceptibly increased; thirdly, instead of an increase of thickness, the mucous membrane may be attenuated. Let us examine these three states in succession.

We have scarcely any thing to say regarding the first state, that in which the mucous membrane is not either perceptibly increased nor diminished in thickness This case is by no means very uncommon. At the same time the mucous membrane is found either simply red or brown, or presenting different colours at one and the same time, and more or less softened.

The increase in the thickness of the mucous membrane is very frequent in cases of chronic inflammation. It may exist either with a state of softening of the membrane, or, on the contrary, with its induration. In the former case, the increase in thickness is in some measure only apparent; the membrane is tumefied, puffed, swollen, as it were, by the liquids which flow to it from all parts under the influence of the inflammatory stimulus: thus the reticulated tissue of the skin becomes swollen, where a blister is applied. This tumefaction of the gastric mucous membrane with softening, is observed more frequently in acute than in chronic gastritis; yet it sometimes exists also in this latter case. On the contrary, the increased thickness, with induration, exists only in chronic gastritis, and is one of its least equivocal signs. There is, in this case, a real increase of density, true *hypertrophy* of the mucous membrane. This is the natural consequence of the more active nutrition of which this membrane must necessarily become the seat, when, having been for a long time the seat of inflammation, it receives a greater quantity of blood than in its healthy state. As long as this hypertrophy alone takes place, it may be said that the inflammation has only given an excess of activity to the nutrition of the mucous membrane, nearly in the same way that exercise occasions hypertrophy of a muscle; but then, the laws of nutrition are still the same as those which existed in the natural state. If, on the contrary, instead of this simple hypertrophy, the gastric mucous membrane present the appearance of softening—if it be ulcerated—if its tissue is transformed into new tissues—then we must no longer merely admit an excess of activity of the phenomena of nutrition; but it must be observed, that the laws which preside over the production of these phenomena have undergone a change, and a real perversion. It is, moreover, very important to remark, that one or other of these effects, namely, mere increase in the activity of nutrition, or the perversion of this function, does not seem to be directly proportioned to the intensity of the inflammation. When violent, and of very long duration, it may occasion only simple hypertrophy of the tissue which it has attacked, apparently very slight; it may modify, and seriously pervert the laws of nutrition, and so produce disorganisations, and degenerations of the most varied character.

Whether the thickening of the gastric mucous membrane coincides with its softening or its induration, it may have at once attacked a great extent of this membrane, or occupy only some circumscribed points of it. These separate partial thickenings may be scarcely perceptible to the sight, and appreciable only when the membrane has been detached. But at other times they are much more considerable. The result may be exanthemes, vegetations, tumours, which present infinite varieties with respect to their form, their texture, their size, their number, and their situation.

I shall not dwell on a description of the very different and strange forms which these tumours may assume; but I shall observe, that very often it is solely in consequence of such or such a form that persons have considered themselves warranted in constituting distinct and particular diseases of several of these tumours, and that many are accustomed, without further examination, to separate their description of the history of chronic gastritis, as if a mere modification of form could establish a real difference between diseases similar in all other respects. Neither need I trouble myself with the differences in the size of these tumours, or with their varieties in point of number. These details are to be found everywhere; these differences, like those of form, are but accidental, and can no more serve than the latter to distinguish the nature of the disease. To attain this latter end, it will be necessary to study particularly their mode of development and their texture.

Considered with respect to their texture, or their anatomical composition, if I may so say, the tumours developed on the inner surface of the mucous membrane of the stomach, and which seem to be nothing but a morbid expansion of this membrane, may be divided into two classes. Under the first may be ranked all those tumours, vegetations, etc., whose texture represents accurately the texture of the mucous membrane, either indurated or in different degrees of softening; in the second class we shall place those tumours whose apparent texture no longer seems to have any resemblance to the texture of the mucous membrane, whether in the healthy or morbid state. The former class of tumours seems to me to be that most frequently observed; and if it is proved that induration and softening of the gastric mucous membrane are a result of its inflammation, these same alterations should also be connected with the latter, where they are circumscribed, and possess sufficient thickness to form tumours. It is manifest that this mere change of form cannot induce a change in the nature of the disease. No controversy can exist then except for the second class of tumours, whose texture no longer appears to be that of the mucous membrane, whether in its healthy state or in different degrees of inflammation. Thus, among the partial thickenings of this membrane, several are formed of a hard homogeneous tissue, of a dull white colour, furrowed or not by vessels. Others constitute vegetations, fungous growths, either pediculated or connected by a broad base with the rest of the mucous membrane, and formed by a soft whitish or reddish tissue, resembling cerebral parenchyma, which is putrefied. This encephaloid tissue, so admirably described by Laennec, indicates evidently a remarkable modification of texture in the mucous membrane. But, if the development of this encephaloid tissue in the stomach is preceded by the same causes as those which give rise to chronic gastritis ; if its presence is indicated by the same symptoms ; if, in a great number of cases, it tends to become confounded, in reference to anatomical structure, with other changes which are the unquestionable result of inflammation ; if, too, it must be combatted by the same mode of treatment—it will, I think, be reasonable to conclude, that the encephaloïd tissue developed in the gastric mucous membrane is the result of an inflammatory process. In making this assertion, I do not mean to say, that wherever the encephaloid tissue appears, inflammation has necessarily given rise to it. I think that, in the present state of science, we do not as yet possess sufficient data to establish such a fact. There are some tissues and organs in which it would be impossible to prove, except by an analogy which might be fallacious, that the different accidental tissues were produced by inflammation ; and, moreover, in all cases this inflammation can concur in their production only as an occasional cause, if there be a predisposition.

The situation of tumours of the mucous membrane, in such or such a part of the stomach, is far from being indifferent, since the greatest varieties may result in the symptoms from one or other of these situations. Who does not know how far from bearing any resemblance to each other, are the phenomena which manifest themselves when the vegetation occupies the parts around the cardia, which it obliterates more or less completely, when it occupies the pylorus, or when it exists only in one or other surface of the stomach ?

Lastly, there are some cases where the gastric mucous membrane, instead of being thickened or hypertrophied, is thinner than in its normal state, and has undergone a real atrophy ; it is principally towards the great cul-de-sac that this latter state is met with, where softening also is most frequently observed. Sometimes, however, I have found the mucous membrane towards the pylorus so attenuated, that it now resembled a sort of transparent extremely fine web. On attempting to raise it, it was changed into a reddish white pulp, as happens in certain degrees of softening. Should atrophy of the mucous membrane of the stomach, like its hypertrophy, and softening without diminution in thickness, be classed among the products of inflammation ? At least, it is certain that, on the one hand, this atrophy, which seems to be but a form of softening of the mucous membrane, most usually accompanies other anatomical signs of chronic gastritis ; and that, on the other hand, the symptoms observed during life are entirely similar to those which announce gastritis*. A woman, thirty-six years of age, died in the Charité in the month of March ; during the three last days of her life she had frequent vomiting. The stomach presented several red patches in different points of its extent ; still farther, in the splenic portion, both over the red patches themselves and in the intervals between them, the mucous membrane was softened, and at the same time so attenuated as not to equal in thickness the mucous membrane of the maxillary sinus.

---

* We must not, however, forget that similar symptoms may be the result of lesions of different kinds, and which require a very different treatment.

However, it would not seem to me unreasonable to admit, that, in some cases, attenuation of the gastric mucous membrane results from mere atrophy, which is no more preceded by inflammation than the latter phenomenon precedes the atrophy of the muscles in phthisical patients. I have observed such an attenuation in some individuals labouring under chronic affections of the lung: in them it was not the mucous membrane only, but the muscular tunic also, which was considerably atrophied.

Ulcerations of the gastric mucous membrane are much more uncommon than of the mucous membrane of the termination of the small and large intestine. However, with respect to the frequency of these ulcerations, a difference must be established between acute and chronic gastritis. In the former, unless it be the result of the introduction of corrosive poisons into the stomach, ulceration is a phenomenon extremely rare. On the contrary, in the case of chronic inflammation of the stomach, the gastric mucous membrane is often found ulcerated; then this ulceration is most frequently single, and of greater or less diameter. Around it the mucous membrane may be healthy or diseased. The same may be said of the cellular membrane, which constitutes the bottom of the ulcer. When the latter consists of the cellular tissue considerably indurated, and when, at the same time, the portion of mucous membrane which exists around the ulceration is thickened, puffy, and, as it were, fungous, and traversed by numerous vessels; when shreds of inflamed mucous membrane, to greater or less extent, are found on the bottom of the ulcer, under the form of vegetation, some physicians call this alteration a cancer of the mucous membrane which has terminated in ulceration. Is this a suitable expression? I shall discuss this point more in detail after having treated of the other coats of the stomach.

We shall not here refer to those cases mentioned in every work in which deep ulcerations of the stomach are observed to terminate in perforation of this organ—we shall not here refer to the circumstance that, in several patients, there is then effusion into the peritoneum of the matters contained in the stomach, whilst in others, where the parietes of the stomach no longer exist, the bottom of the ulcer is formed by the liver, the spleen, and the pancreas, which adhere to its circumference, and prevent any effusion into the peritoneal cavity. Here, however, we shall state a fact which is remarkable for the circumstances which preceded the perforation, and for the nature as well as the number of the lesions which existed simultaneously with it. We shall then cite the case of another individual, who also suffered from a cancerous affection of the stomach, and who presented this curious circumstance, that in him the stomach was perforated during an effort to vomit, and at a distance from the point where the cancer existed.

CASE 1.—*Communication between the cavity of a cancerous stomach, with the interior of the lung in a state of gangrene, through an opening which involved the pleura, diaphragm, and spleen which was in a great measure destroyed.—During life, signs of pneumothorax, and of an old affection of the stomach.*

A tailor, forty years of age, a native of Bavaria, of a lymphatico-sanguineous constitution, with hair, eye-brows, and beard of a brown colour, blue eyes, complexion not high coloured, still not pale, five feet in height. Had small umbilical hernia of long standing. His father and mother were healthy, and still alive. He states that he never had been subject to chest affections, and that he had always enjoyed good health up to the close of 1828, when, for the first time, he felt frequently very ill from difficult digestion; he experienced alternately a devouring appetite and absolute disgust for every kind of food He had been in France since 1810, and had constantly lived in the greatest hardship, being addicted to the excessive use of ardent spirits. He had had nine attacks of syphilis in three years, and generally slept in the open air. When sober, however, he was constantly employed at his trade, he being a very clever and expert workman, as his master told me, who furnished me with these particulars.

It appeared that, on the 20th of August, 1829, after a violent altercation with some comrades, he went and lay down in an unsheltered place, according to custom, and slept there for three hours. When he awoke he was extremely cold, and returned home, and, as the daylight had not yet appeared, he lay down on a table, and slept till morning. On awaking, he had a violent shivering, an acute pain under the left breast, and was altogether very ill. A little after dyspnœa came on. At last, towards the fourth day, he expectorated a great quantity of yellow thick sputa (never streaked), and not having any remarkable taste. He had violent fits of coughing, which lasted, without ceasing, for more than half a day. Fumigations with vinegar, were recommended for the pain of head. He took some demulcent drinks, and found himself somewhat relieved on the following day. The pain and cough were gone. On the 12th September he entered the Charité, the above-mentioned symptoms having increased considerably in the course of a few hours ; and on the 13th,when we visited him, he presented the following symptoms : —Countenance pale, emaciated, and expressive of distress ; breath very fetid ; the gums red and excoriated ; tongue pale and moist. The patient experienced extreme difficulty in articulating his words ; breathing very short ; there was even orthopnœa ; extreme debility induced him to lie on the left side, but he was soon obliged to raise himself suddenly, and to place himself in a semi-recumbent posture, resting on his left elbow. The chest projected on the left side, and its development was such that the intercostal muscles were protruded beyond the ribs. The right side alone moved during respiration, and the motions of elevation were perceptible on the left side only at the intervals between the ribs. The vibration, which was nearly absent on the left side, was very perceptible on the right. The respiratory murmur wanting on the left, and very distinct on the right side. The metallic souffle is heard occasionally above the left breast, but it is light and intermittent. On the left there is a sonorousness both absolutely and relatively very great. On the right the sound is natural. When the patient sits up, a position in which he is able to remain only for a few moments, the phenomena in the posterior part of the chest are precisely similar to those on the anterior. The voice is resonant and amphoric on the left ; it is natural on the right. The metallic tinkling is perceived to be but very slight ; this may be attributed, no doubt, to the impossibility of auscultating the patient in a satisfactory manner. Lastly, the cough is frequent, the respiration panting ; the expectoration, which is rather considerable, presents diffluent white sputa, not frothy, and mixed with light flocculi ; their stench is suffocating. (One would think their odour to be that of fæces combined with that of gangrene. We shall presently see that the diagnosis was well founded.) Pulse weak and frequent ; skin rather colder than natural. On the 14th, same state ; more difficulty in the respiration. On the 15th, the patient is no longer able to rest ; every position is painful to him ; the orthopnœa is increased since yesterday ; cough violent ; the odour of the sputa extremely fetid.

On the 16th, for the first time, we were able to examine the posterior part of the thorax satisfactorily ; we found towards the inferior angle of the scapula the metallic tinkling very distinct, the respiration amphoric, the voice the same, the metallic souffle very loud during inspiration. This point is painful. On the right the respiration was bronchial ; on the left there was dulness ; on the right sonorousness ; just the contrary anteriorly, where the phenomena remained similar to what they were on the 15th. Pulse frequent and small ; skin cold ; tongue red in the centre and edges, and presenting some white spots towards the base. Great shortness of breath, cough less frequent than yesterday ; orthopnœa ; sputa very different from what they were observed to be the preceding days, being now viscid, like a thick solution of gum, and mixed with white grains about the size of a hemp-seed; their odour not so strong as on the preceding evening. This night the patient slept a little; he is now very feeble; countenance pale, eyes sunk; the alæ nasi depressed; there is a great appearance of dejection and anxiety; voice changed.

On the 17th the same general state; sputa contain less white grains than on the preceding day, their odour was sourish; the smell from the patient resembled that which comes from persons in whom, after amputation, the lung has become the seat of suppuration. He can now lie on the left side.

On the 18th there was great dyspnœa; the sputa were of the same character, but much less copious; but little cough; countenance very much dejected and pale; voice very weak, and articulation very difficult. The patient slept a little; he sits up, embracing his knees between his hands, or when fatigued, throws himself on his left side. Pulse ninety-five, hard, small, and wiry; extremities cold; some sweat on the chest, which is very much enlarged on the left side, very sonorous, presenting no vibration, and painful; the intercostal spaces give to the touch the sensation of a bladder full of air. We hear only the metallic tinkling and resonance of the voice on the right; respiration puerile; dilatation not much marked; respiration almost entirely abdominal; some vibration and some pain also, but less severe than on the left side. No diarrhœa, three stools at most; no desire for drink or food; breath sour.

On the 19th the state of the patient worse in every respect. The metallic and amphoric murmurs increased. No sputa; but little cough; unable to articulate a single word; cold, clammy, fetid, sour smell. The mucous rale usually indicating the approach of death at about two o'clock in the afternoon; died at nine o'clock without a moan.

Post mortem, twenty-one hours after death. Great emaciation; entire body of a dull pale colour; considerable enlargement of the left side of the chest. An incision made between the seventh and eighth ribs gave exit to a quantity of air, sufficient to extinguish and again to light a candle. The left lung was pressed along the spine, and adhered by its posterior surface to the parietes of the chest; superiorly the adhesions were of long standing, and inferiorly they were recent. This organ was become carnified, and its green colour was not owing to cadaveric decomposition. The cavity was half filled with a liquid somewhat resembling whey, in which whitish, friable clots floated like cheese. This lung being inflated through the trachea, presented an aperture situated towards the middle part of the circumference of the left lobe; two fingers from its edge the air which escaped from it produced bubbles, which burst on the surface of the effused liquid; lower down, this edge adhered to the ribs through the remainder of its extent, and on destroying this connexion a greyish brown eschar was found of the size of a filbert, not entirely stopping up a second aperture. These two openings were formed on the outer wall of a burrow which contained some pulmonary detritus, and communicated by means of adhesion and subsequent suppuration with the great cul-de-sac of the stomach; the aperture was capable of admitting two fingers. This latter viscus was scirrhous through its entire cardiac portion, and was from one inch to eighteen lines thick towards the perforation. We shall speak of this state in another place.

The pleura costalis was ulcerated through almost its entire extent, and over those points not adhering to the lung; it exposed to view the internal intercostals, which were also perforated in some points over their entire surface. The parietal pleura was smooth and covered with a very fine pseudo-membrane, which was gangrenous in some points, and which, when cut into perpendicularly, led to cavities containing a detritus resembling soot diluted in water, and also gangrenous pus; a very characteristic odour was exhaled from it; it resembled that of the sputa of the 12th, but was stronger and more suffocating. These cavities were large enough to contain a hemp-seed, some of them even a small pea. The summit of the lung contained some cretaceous masses, deposited in the traces of old cavities formerly obliterated ; their great hardness indicated the remote period of their formation.

The right pleura contained only a little limpid serum ; here and there it was inflamed, and presented a slate-coloured tint ; on some points only it was covered by false membrane, similar to that on the left side. The lung, which was in a great measure pervious to air, was covered by a tissue resembling that on the left side, but not continuous ; it was deficient principally where some spots were observed, which led, as on the left side, to gangrenous cavities ; they were more common on this side. The summit of the upper lobe presented an appearance of retraction, and some rugæ, indicating the existence of former cavities. When incised vertically it presented cretaceous masses, as on the left. The pericardium was red to about one-third of its extent on the left ; on the right there were some arborisations. The heart presented here and there some whitish patches. It was not large in size.

The diaphragm on the left side was visibly altered in its texture, and participated in the cancerous degeneration of the stomach at the point of its perforation only : at a distance from that it was intact, and presented nothing remarkable.

The stomach contained a liquid like to that of the left thoracic cavity ; its parietes gradually increased in thickness from the pylorus, which was intact to the great cul-de-sac, which was perforated, as has been already mentioned. Its substance was indurated and fatty, its colour was white, more particularly at the part occupied by the muscular coat, which appeared to be a layer distinct from the rest ; towards the small curvature, and around the solution of continuity, the mucous membrane presented numerous fungous growths, the vertical section of which exposed to view a white tissue, traversed by a very small number of blood-vessels.

The spleen was gone ; it formed the centre of the purulent collection formed through the diaphragm ; its parenchyma might still be recognized in its almost natural state towards the two extremities of its great diameter ; its entire centre was reduced to a brownish pulp, and formed several incomplete septa, which lay transverse to the axis of the burrow.

The gastro-colic epiploon was very red, and presented a multitude of miliary vegetations, which were also red and hard. The liver was large and very yellow, but did not grease the scalpel. The ductus choledochus was very broad. The kidneys were healthy ; the left adhered by its upper extremity to the cul-de-sac of the stomach, and to the mass formed by this viscus, the spleen, and the diaphragm. Its suprarenal capsule no longer existed ; it was found on the right, where it was large.

The intestines, which in general were in a state of inflammation, were covered with a sero-purulent, creamy membrane ; the lower part of the lesser pelvis contained some spoonsful of a thick purulent liquid. The mesenteric glands, and chiefly those adhering to the vertebral column, were indurated and scirrhous.

The bladder was healthy. The urethra bore traces of a former inflammation ; the mucous membrane was ulcerated in different points, and excoriated towards the free orifice.

Case 2.—*Cancerous ulcer of the stomach ; bottom of the ulcer formed by the pancreas—Perforation of the parietes of the stomach during an effort of vomiting—Peritonitis.*

A copper-smith, aged sixty-four years, stated that he was tormented the last month only with very severe abdominal pains, which lasted for half-a-day, then left him, and returned in a day or two.

There was at the same time complete loss of appetite, nausea, and vomiting.

The introduction of food into the stomach increased, or even brought on abdominal pains, the precise seat of which the patient did not fix upon. The food was most frequently partly thrown up, some time, or more rarely immediately after it had been swallowed. The patient was not very strictly examined, his trade of a copper-smith having inclined us to think that his symptoms were attributable to metallic emanations ; in fact, that it was a case of lead colic, accompanied by some unusual symptoms. Consequently, we ordered him four grains of tartar emetic in a glass of water ; a narcotic lavement ; decoction of prunes sweetened for his drink.

He vomited very much after having taken the tartar emetic, and had copious evacuations by stool. After an effort to vomit, he felt the sensation as if a ball, commencing at the epigastric region, had descended below the umbilicus. From this moment all the symptoms of super-acute peritonitis made their appearance. He died the following day.

Post mortem.—Head and chest perfectly sound.

Abdomen.—A great quantity of reddish serum, mixed with albuminous flocculi, was effused in the abdomen. The peritoneal coat of the intestines presented patches of a bright red colour in different points. The mucous membrane was healthy.

Stomach.—On the anterior aspect of this viscus, about three or four fingers breadth to the left of the pylorus, very close to the edge of the diaphragm, was observed a perforation large enough to admit the extremity of the little finger. The contents of the stomach were no doubt effused into the cavity of the peritoneum through this perforation, which was occasioned by a rupture of the diseased parietes of the stomach in the midst of the efforts made to vomit. Thence the peritonitis ; the sensation of the ball experienced by the patient, probably indicated the moment when this effusion had taken place. An incision being made into the stomach, we found posteriorly, and more to the left than the perforation of the anterior wall, an ulcer nearly three or four times as large, with thick raised edges, irregular in its form, the bottom of which was formed by the pancreas, the coats of the stomach having been in this part entirely destroyed. A dense cellular tissue united the edges of the ulcer to the pancreas, and thus, by a wondrous resource of nature, prevented effusion into the abdominal cavity. Around this ulcer the coats of the stomach, which were considerably thickened, had degenerated into a white lardaceous tissue. The bottom of the ulcer itself presented a blackish layer, reduced to putrilage. Beneath this layer, which was from four to five lines in thickness, the tissue of the pancreas had retained its natural appearance.

SECTION II.

ALTERATIONS OF THE TISSUES SUBJACENT TO THE MUCOUS MEMBRANE.

In the preceding paragraph I endeavoured particularly to describe the numerous and varied alterations which the gastric mucous membrane may undergo when affected with chronic inflammation. In this second article I shall treat of the lesions of the other tissues which enter into the composition of the parietes of the stomach.

Situate beneath the mucous membrane, and still dependent on it, the follicles, scattered over the internal surface of the stomach, present certain alterations, which act an important part in the diseases of the stomach. These alterations principally regard, first, their size; secondly, the structure of the parietes; thirdly, the nature of the ordinary secretion of these follicles.

There are stomachs on the inner surface of which the most attentive examination can with difficulty discover some cryptæ, which are scarcely apparent; and this nearly complete absence of follicles may be found, as well in a stomach apparently healthy, as in a stomach in different degrees of inflammation of an acute or chronic form. On the internal surface of other stomachs the follicles are much more visible; being really hypertrophied, they present themselves as rounded granulations, both separate, and aggregated in different points of the stomach. It is not probable that in such cases the follicles observed are of new formation; but having been too small in their normal state to be perceptible, they became apparent according as the inflammation, by rendering them the seat of a more active nutrition, has increased their size. This unusual development of the follicles in the stomach may be either partial or general; when partial, it is observed principally around two points; first, around and a little beneath the cardiac orifice; secondly, towards the pyloric extremity of the stomach, to the extent of some fingers' breadth beyond the point of separation of this organ and the duodenum. The mucous crypts are sometimes found so much enlarged and so agglomerated in this situation, that the internal surface of the stomach then resembles the structure of the duodenum, particularly in the first flexure of this organ, where the mucous cryptæ are larger, more numerous, and closer to each other than in any other point of the digestive tube, except, however, where Peyer's glands exist; these latter, in their normal state, are much less voluminous than the cryptæ of the duodenum.

When the development of the gastric follicles is general, two varieties of appearance are presented on the internal surface of the stomach. Sometimes a great number of granulations are scattered over its entire surface, of various sizes, white, grey, red, or brownish, in the centre of which one may often discover an orifice, frequently surrounded by a red or black vascular circle. Sometimes, in consequence of a still greater development of the follicles, the mucous membrane presents a mammillated appearance over a greater or less portion of its surface. At first view, one might suppose that this mammillated appearance depends on the unequal hypertrophy of the mucous membrane in its different parts; this may be true in some cases; but attentive examination has more than once satisfied me, that the mammillary appearance of the gastric mucous membrane may also be owing to the simultaneous increase of nutrition in a great number of the follicles, it is these latter, which, being hypertrophied, constitute the mammillæ; and the depressions, or furrows which are between them, appear to be merely portions of mucous membrane not raised by the follicles. When the internal surface of the stomach presents this mammillated appearance, there usually exists at the same time a grey or brown colour of the mucous membrane, and during life the different appearances which characterize chronic gastritis are observed. More than once I found no other lesion in persons who had presented all the rational signs of what is called a cancerous affection of the stomach, such as lancinating pain in the epigastrium, whether continued or not; pale yellow tint of countenance, marasmus, vomiting of food, and of black matters, etc.

Such are the principal alterations which the mucous follicles of the stomach present in the human subject; but in the horse I have frequently found in these same follicles other lesions which appear to me particularly deserving of attention, from the inferences which may be deduced from them with respect to the nature of some of the disorganizations and changes of several of our tissues.

It is not uncommon to see rounded tumours on the inner surface of the horse's stomach, the size of which varies from that of a cherry or a walnut to that of a large orange. The mucous membrane passes over them, and in the centre of each is an orifice, through which a probe, being introduced, readily passes into the interior of the tumour, which far from being solid in its structure, forms on the contrary a mere pouch, filled with a liquid, which varies in its nature and consistence. Sometimes this liquid resembles mucus, sometimes it presents a purulent appearance; at other times it has more consistence, is of a grumous character and friable, of a dull white or light yellow colour; whilst at other times it resembles honey, or that which escapes from melicerous tumours, developed beneath the skin; in more than one instance the matter accumulated within these tumours resembled the sebaceous, fatty matter, found in certain cutaneous pimples. The anatomical composition of the parietes of these tumours was not less variable than the nature of the liquid which they contained. In some these parietes were very thin, and were formed of prolongations of the mucous membrane, covered externally by a more or less dense layer of cellular tissue. In other tumours this cellular layer gradually assumed a fibrous aspect, and sometimes was found to be changed into real cartilage.

I have sometimes seen the fibrous or cartilaginous parietes of these tumours divided into very many cells, which contained a number of entozoa, having all the characters of the nematodes of Rudolphi, of a beautiful white colour, very thin at their two extremities, from one to two lines in length, of the thickness of a hair, moving with great agility in the cells in which they were accumulated, being found also inside the principal pouch, escaping through the central orifice of the latter, and spreading over the internal surface of the stomach. These worms were not the product of putrefaction, for they were found in horses which were opened immediately after being slaughtered.

What is the nature of these tumours? If for the purpose of discovering it we commence by opening the largest of them, we are left in uncertainty with respect to their origin and their mode of formation, and we are induced to class them among those kysts which may be developed within the animal tissues, and particularly within the cellular structure which surrounds and separates these different tissues. Still, on examining even the most complicated case, one circumstance almost invariably strikes the observer, and that is, the existence of an orifice in the centre of these tumours; the regularity of this orifice, its uniform position, its diameter, which is always the same, the appearance of its edges, are incompatible with the idea of a solution of continuity, and already induce us to suspect that this is a natural opening, and that it is probably the dilated orifice of an enlarged follicle. However, this is but a mere presumption; and if we study smaller tumours with more simple parietes, this presumption becomes a certainty: we see the follicle become enlarged by insensible degrees, its parietes become hypertrophied, its cavity dilated, new tissues developed around it, and the mucus, which it secretes in the normal state, become regularly changed into purulent, tuberculous, sebaceous, melicerous, or cretaceous matter, and replaced at length by a fluid, within which living beings, entozoa, are developed. When once these successive changes are perceived and appreciated, the nature of the largest of these tumours is no more difficult to be ascertained than that of the smallest and most simple. Some of these tumours present no central orifice; but as every other part is the same, we must only infer that this orifice has become obliterated in the same manner as we frequently see the orifice of the cutaneous follicles disappear, which being enlarged, become dark pimples (tannes). Thus, and this is the general conclusion which I shall deduce from the preceding facts, a tissue or organ when it has once deviated from its normal mode of nutrition, may undergo the most varied, the most unexpected changes, whether in its form, or in its texture; and in this series of changes it may become so unlike itself, that it would not be recognised if we did not study in their regular order the numerous changes which it has undergone. By proceeding in this way we may often prove that several accidental productions, which are considered as tissues of an entirely different nature, and are produced entirely within the tissues of the normal state, are but these latter tissues modified.' I have elsewhere endeavoured to prove that this was the case, for instance, with the pulmonary granulations * ; and in the continuation of this work I shall endeavour to comprise under this head the formation of scirrhous degeneration of the stomach.

The liquids secreted by the healthy stomach may be more or less altered with respect to their quantity and qualities in cases of chronic gastritis. An individual who entered the Charité with all the symptoms of this disease, vomited every day, for a long time, nearly four pints of a whitish, glairy mucus, resembling the white of egg before it is boiled. This mucus was vomited several times in the twenty-four hours : what was most remarkable in the case is, that the little food taken by the patient was never vomited. On opening the body, no other lesion was found in the stomach except thickening of the mucous membrane, with a brown colouring of its tissue and very marked enlargement of the follicles.

Among the matters found after death in the stomach in chronic inflammation, and which are sometimes vomited during life in prodigious quantity, we must not forget that black matter, which has for so long a time engaged the attention of pathologists, and which has been compared to a solution of chocolate, or to coffee-grounds. Two questions may be started here : first, what is the nature of this matter ? second, is its secretion connected with any special lesion of the stomach ?

I sent to M. Lassaigne a certain quantity of black matter vomited by a woman, who for more than a month had been throwing up a pint of it every day. It contained water, albumen, a free acid of an organic nature, and further, it was rendered turbid and blackish by holding in suspension a deep brown colouring matter, insoluble in water, but soluble in sulphuric acid, and presenting, when thus dissolved, a beautiful blood-red colour, similar to that presented by the colouring matter of the blood in the same acid. When submitted to calcination, it burned without swelling, and left a slight residue of a brick colour, consisting of peroxide of iron, and traces of phosphate of lime, just as it is furnished by the colouring matter of the blood.

From this analysis it follows that the black colour of the matters vomited in certain affections of the stomach is owing to the presence of an organic element closely resembling the colouring matter of the blood. Such is the conclusion to which M. Breschet also came, when after having proved in his beautiful work on melanosis, that this accidental production is principally formed of a colouring matter very similar to that of the blood, induction led him to class the matter of black vomit under the head of melanosis. In another work † I tried to confirm this opinion by new proofs. In a stomach which I recently examined, I found black colouring matter under two forms. First it existed free in the cavity of the stomach, on the inner surface of which it had been secreted, and further, in several places, it was combined with the gastric mucous membrane, and gave it a beautiful black colour, in the same manner as it colours certain portions of mucous membranes in several animals in the normal state.

Thus then, with respect to its chemical composition as well as to its colour, the matter of black vomit should be considered as similar to the matter of melanosis ; like the latter, it is formed principally of a colouring matter, which resembles very strongly that of the blood. It must be admitted that in the act which separates it from the blood, it may be more or less modified ; the result of which will be, that under some circumstances it will be completely identical with the matter

---

* Pathological Anatomy. † Ibid.

which gives its colour to the blood, whilst under other circumstances it will differ more or less from it*. This same thing happens with respect to several other products, of the healthy or morbid state, which come from the blood. Thus the serum separated from the blood on the surface of serous membranes is no longer the same as that which is found in the blood with respect to the proportion of water, albumen, and the salts it contains. The same may be said of the fibrine, etc.

We shall here give the history of a case in which black matter was found scattered over the internal surface of the stomach in the form of black spots, at the same time that it existed free, and in a liquid form in the cavity of the organ.

Case 3.—*Melanosis of the stomach—No other gastric symptoms but total loss of appetite—Dropsy without any appreciable lesion to account for it.*

A woman, about fifty years of age, died in the Charité during the month of February. At the time of her entering the hospital she had general serous infiltration of the subcutaneous cellular tissue and ascites. To no purpose did we endeavour to find out the cause of this state; the pulsation of the heart seemed to be natural; there was no sign of any disease of the liver or of any other viscus. The previous history of the case did not throw any light on it; she stated that her dropsy had set in gradually, commencing at the extremities, and extending to the abdomen; she had never felt any pain in the latter part, nor any difficulty of breathing till the ascites had become considerable. For the six weeks which elapsed between her admission and death, the dropsy did not diminish; the general debility constantly increased; some diarrhœa occurred from time to time, and there was complete loss of appetite; no pain in the epigastrium, no vomiting, the appearance of the tongue natural. The patient went on sinking gradually, and died without presenting any new symptoms.

On opening the body no lesion was found in the heart or its appendages. The lungs were engorged posteriorly, but healthy in other respects. The thoracic duct contained, as usual, a little colourless, limpid serum. A similar liquid was effused in great quantity into the peritoneum, which presented not the slightest trace of inflammation. Liver to all appearance healthy. But the stomach presented a species of change, which could scarcely have been anticipated. On making an incision into it along its great curvature, there escaped a fluid black as ink, and which, when brought in contact with linen and white paper, gave them a tint similar to that which would have been produced by applying the choroid membrane to these substances. The quantity of this liquid contained in the stomach might be estimated at about three ordinary glassfuls. The inner surface of the stomach having been washed and well cleaned, we found it dotted with a great number of spots of a deep black colour, all accurately circular or oval. Three or four of these spots were a little broader than a two-franc piece: eight or ten of them were the size of a franc piece; the others, much more numerous, were from the size of a ten or five sous piece to that of a grain of millet; in other parts they presented themselves merely as very small black points. Around the two larger spots and a few of the others the mucous membrane presented a livid red colour, which being considerably marked for the space of some lines around the black spot became gradually fainter according as it receded;

---

* It is possible that further researches may prove that the black colouring matter which constitutes melanic productions differs altogether in certain cases, with respect to its chemical composition, from the colouring matter of the blood, and that it is then a secretion of a new formation, just as the numerous colouring matters, blue, green, etc., which so richly tint the skins and coverings of several animals. Some physiological data would incline me for instance to think that the black colouring matter of the lungs, which abounds so much in old persons, is principally formed of carbon.

around the other spots, in the intervals between, and in every other part, the inner surface of the stomach was pale, and the mucous membrane presented no appreciable alteration with respect to its consistence and thickness. It was only in the mucous membrane that the black colour existed, but it presented it equally strong on its two surfaces; where it was thus coloured, it was a little thicker and more resisting than elsewhere. In some points the cellular tissue subjacent to the black points was reddish. We observed nothing remarkable in the rest of the digestive tube.

When we perceived these black spots like ebony, scattered over the internal surface of the stomach, we were struck by their strong resemblance to red gangrenous patches, and particularly to the eschars occasioned by concentrated sulphuric acid when taken into the stomach. Still no gangrenous odour was exhaled from the stomach; the manner of the patient's death repelled all idea of poisoning by a corrosive substance; there was no symptom of any acute affection of the stomach; on the other hand a resemblance might be observed between the nature of the black spots of the mucous membrane, and that of the liquid of the same colour contained in the stomach. Hence we renounced all idea of a gangrenous affection, an idea which accorded neither with the nature of the symptoms, nor with that of the lesions when more attentively examined. In this case we saw nothing but melanosis of the stomach, in other words, a secretion of black colouring matter, which, on the one hand, had been deposited in the tissue itself of the mucous membrane, whence the accidental black colour of this membrane, similar to that which exists naturally in animals in certain portions of their mucous membranes, and which, on the other hand, had been exhaled on the free surface of the mucous membrane, whence came the black fluid in the interior of the stomach.

I thought it useful to publish this fact: first, because but very few examples of similar deposition of black pigment in the form of circumscribed spots in the tissue of the gastric mucous membrane have been as yet recorded; secondly, because this fact may not be devoid of importance in reference to forensic medicine, as presenting lesions which in some respects resemble those which may be occasioned by sulphuric acid; thirdly, because this fact proves that a matter similar to that which constitutes black vomiting in certain cancers of the stomach, may be exhaled in this organ without any cancerous affection, or even without gastritis; for here in the interval between the black spots, the mucous membrane was very healthy, and there is nothing to prove that these black patches were the result of an inflammatory process. It is probable that the black pigment effused into the stomach formed there during life in only a very small quantity, so as to be able to pass entirely into the duodenum; for if it were more abundant it must have been discharged by vomiting. Probably also its exhalation did not commence until a little time before death. We should not forget how little marked the gastric symptoms were. Loss of appetite was the only sign of any gastric disturbance. Another remarkable circumstance in this case is the existence of dropsy (anasarca and ascites) without any appreciable lesion, whether mechanical or inflammatory, which can account for it. Here it is not in our power to ascend to the cause which produced this dropsy; for to say that it depended on over activity of the exhalants or atony of the absorbents, or on a want of equilibrium between these two orders of vessels, is mere hypothesis. All we see is an increase of quantity in the liquid which filled the areolæ of the cellular tissue, and the serous membrane of the abdomen. Thus then notwithstanding the great light which modern researches have thrown on the etiology of dropsy, experience obliges us to admit that there are still some cases in which neither the study of the symptoms nor pathological anatomy can as yet reveal the cause.

I already tried in a preceding part of this work to show, how, consecutively to inflammation of the mucous membrane, and whether this inflammation still continues or has disappeared, the tissues subjacent to it may undergo different species of alteration, which we shall now describe.

In the number of those tissues or anatomical elements, besides the mucous membrane, which enter into the structure of the parietes of the stomach, we must place in the first rank with respect to the frequency and importance of their alterations, the two cellular layers placed, one between the mucous and muscular membrane, the other between the latter and the peritoneum, which are connected together by cellular prolongations extended between the fasciculi of the muscular tunic. When they are attacked with inflammation, and their normal nutrition has become deranged, these different portions of the cellular tissue may undergo changes of the most varied character with respect to their form and texture; thence the same thing happens with respect to their morbid states as we have already seen happen in certain diseases of the follicles, namely, that for want of tracing their successive development, their origin and nature have been more or less mistaken.

The submucous cellular tissue is seldom altered in cases of acute inflammation, when the mucous membrane is most seriously affected; sometimes, however, it then becomes injected or softened; it may also remain intact in several cases of chronic gastritis, whatever be the different degrees of intensity and duration of the latter. But at other times this cellular tissue is also attacked by inflammation, either singly and by itself, or simultaneously with the other portions of the cellular tissue which enter into the structure of the parietes of the stomach. There are cases in which it becomes attenuated like the mucous membrane, and like it also, it ultimately disappears; at other times it becomes softened, and changed into a liquid pulp; and then this submucous cellular layer, which on the one hand, makes up for the want of strength of the mucous membrane, and on the other hand is continued into the interstices between the fasciculi of the muscular coat, then altogether ceases to exist under the form of a solid, resisting membrane; in such a state of things the parietes of the stomach lose a considerable portion of the resisting power which they oppose to the different causes which tend to produce in them a solution of continuity. We then see the stomach easily ruptured after a great quantity of drink has been taken into its cavity, after more or less powerful contraction of the abdominal muscles, or in consequence of internal violence applied to the epigastrium.

Increase in the thickness and consistence of the cellular tissue is observed in many cases wherein the different tissues with which it is connected are in a state of chronic inflammation. This often happens with respect to the cellular tissue which connects, and at the same time separates, the different coats of the stomach. From the different degrees of thickening and induration of this tissue comes that species of alteration of texture which has been generally described by writers under the name of scirrhus of the stomach. According as the gastric cellular tissue becomes thickened and indurated, it deviates more and more from its normal appearance, and undergoes remarkable changes; but amidst these successive changes we may trace with the scalpel the different stages through which it passes in order to reach them. The most common change which it undergoes is that in which it presents itself under the form of a greyish, bluish, or dull white tissue, of a homogeneous appearance, without any traces of vessels, hard and friable under the scalpel. This is scirrhus *par excellence*. There is no objection to the use of this term, provided we rightly understand its import, and do not take it to signify a new tissue formed in the system, just as an entozoaire is, whilst it is in reality nothing but the change of a tissue from its normal state. In fact, where is scirrhus found? Never in any other tissues but in the cellular tissue interposed between them. At the same time that the cellular fibre surrounding them is indurated and becomes scirrhous, those tissues may be changed in different ways; they may ultimately be destroyed and disappear, but they do not really become scirrhus. This is very evident in the case of mucous membranes. On the other hand observe indurated cellular tissue in different parts of the system, and you will be struck with a singular contradiction of authors, who consider a tissue to be scirrhus which is absolutely similar to another to which they invariably give the name of simple induration. Thus in a great number of chronic diarrhæas, the submucous cellular tissue of the large intestine becomes much more developed than natural; it is changed into a hard, whitish, and homogeneous tissue. If its increase of thickness is general and still inconsiderable, the only result is a certain rigidity in all the parietes of the geat intestine, it is not yet scirrhus; but if the appearance of the tissue being in other respects absolutely the same, the increase in thickness is partial, and considerable enough to occasion a tumour, that which was a little while ago simple hardening of the cellular tissue, now becomes a new tissue, and is called scirrhus. Neither is this name given to the hardening so often observed in the cellular tissue either at the bottom of ulcers of the mucous membranes, or around old cutaneous ulcers, or along the course of a fistula, or around several white tumours of the joints, or in the vicinity of a caries, or necrosis. Yet, in these different cases the alteration called hardening of the cellular tissue presents an appearance identical in every respect with the alteration which in the stomach is called by the name of scirrhus.

Sometimes the submucous cellular tissue of the stomach presents not only the state of simple induration now in question (the scirrhus of authors); it is not only hypertrophied *, but it undergoes a real change; it assumes the characters of the cartilaginous tissue, and more particularly of that imperfect cartilaginous tissue, still soft and inelastic, which exists at first in the embryo. However, a real transformation into cartilage is much more uncommon in the submucous than in the sub-serous cellular tissue.

If instead of being greyish or bluish, as it were semi-transparent, the indurated cellular tissue of the stomach is of a dull white colour, and opaque; if instead of being devoid of vessels, it is traversed by vascular ramifications, more or less numerous, it is then no longer scirrhus; it is cerebriform or encephaloid tissue, said to be developed in the parietes of the stomach. For a long time I admitted this distinction; but I own that more extended researches have proved to me that it was all arbitrary. In the majority of cases we see the two tissues called scirrhus and encephaloid, confounded by insensible shades; and ultimately the latter appears, like the former, to be merely a form of induration which the sub-mucous cellular tissue of the stomach has undergone. It is obvious that in these different degrees of aberration of nutrition, this cellular tissue has many degrees of colour. And with respect to the presence or absence of vessels, do we not see that that is a circumstance purely accidental? If in the normal state the sub-mucous cellular tissue is traversed by vessels, it follows that these vessels must still exist in this same cellular tissue hypertrophied; but they will be more or less apparent according to the degree of sanguineous congestion which may exist in this tissue at the time of examination.

The presence or absence of vessels in the indurated cellular tissue it is then of some importance to remark, not for the purpose of establishing from it two kinds of morbid tissues, but in order that we may thus admit the greater or less activity of sanguineous congestion, and of inflammation in this same cellular tissue. Thence arise different symptoms which will not result from the presence of morbid tissues really different, but only from different degrees of inflammation of one and the same tissue.

At the same time that the nutrition of the gastric cellular tissue is altered, secretions of various kinds may, and in fact do, often go on there. Oftentimes in

---

* Since the first edition, my opinion on the nature of schirrus has been a little modified, and it will be seen, in my Pathological Anatomy, that schirrus no longer appears to me to consist merely in a simple state of hypertrophy of the cellular tissue. There is also a process of morbid secretion in the part where it forms.

the midst of the indurated portions of this tissue, we find a kind of areolæ, or cells, containing a semi-liquid matter, like jelly, or honey ; it is said that this is softened scirrhus ; but that is assertion without proof ; and if this matter is altogether similar to that which is found in a great many kysts with serous parietes, if it is found in certain compound tumours of the ovary, and the thyroid gland, where it is contained in distant cells, and where nothing around it resembles scirrhus ; if it be observed within cartilaginous masses, where nothing else is seen except a gluelike matter arranged in cavities, whose parietes consist solely of cartilage ; if, as I once saw in the pleura, a similar matter may form on a serous membrane, which evidently secreted it instead of serum ; if, in a word, in these different cases, this so called scirrhus in the state of softening presents itself as a simple product of secretion, independent altogether of any previous scirrhous state, strict analogy will induce us to conclude that the matter resembling jelly, or honey, often found in the midst of the indurated cellular tissue of the stomach, is not this same tissue softened ; but that in this, as in other cases already cited, it is a new product deposited there by secretion.

At other times, within this same indurated cellular tissue, another species of secretion takes place ; namely, a liquid, opaque matter, sometimes of a dull white, sometimes of a greyish colour, oftentimes tinged with blood ; it is, in a word, one of those varieties of the morbid liquid designated by the generic term pus. Whatever may be the shades of its physical properties, it presents itself under two appearances ; sometimes it is really infiltrated in the midst of the cellular tissue, which has become changed into what is called a scirrhous or encephaloid tumour ; it may be forced from it by expression in the form of a drop ; it sometimes has a tendency to unite into a single abscess (foyer), which increases in size, and at last occupies a part of the solid mass within which it was secreted, and wherein it was first infiltrated. Then the cellular tissue in the midst of which this secretion of pus takes place, almost always presents numerous vessels, which pass in different directions through the tumour which it forms ; the presence of these vessels, the secretion of this purulent liquid, prove the existence of a more active inflammatory process in this tumour ; from henceforward another mode of alteration of nutrition comes on in the cellular tissue ; after being hypertrophied under the influence of slight irritation, more remarkable for its duration than its intensity, it evinces a tendency to ulcerate ; the vessels which pass through it are torn, and according to the size of these vessels, the result is either a mere reddish colouring of the purulent matter, or profuse and fatal hæmorrhage.

Thus, in all this, there are three principal phenomena to be observed : 1st, an inflammatory state more severe than, and of a different nature from, that which had produced the hypertrophy of the cellular tissue ; 2nd, a purulent secretion ; 3rd, a tendency to the destruction of the tumour, according as the inflammation proceeds.

From the preceding facts and considerations, I think I may conclude, that among the tumours developed beneath the gastric mucous membrane, those which are generally considered as formed of what are called scirrhous and encephaloid tissues, in the crude state, are merely forms of hypertrophy of the sub-mucous cellular tissue ; and with respect to the state of softening of these same tissues, I think that this name has been very incorrectly given to new products, which are deposited by the process of secretion within the previously inflamed cellular tissue. Other morbid secretions may still go on there : thus tuberculous matter is often found there in greater or less masses ; sometimes, too, we find, either in single points, or in patches of greater or less size, depositions of colouring matter, of various hues, more particularly of a yellow or black (melanosis).

Hypertrophy of the gastric cellular tissue may be limited to the sub-mucous membrane of Bichat (the nervous coat of the ancients) : this is the most common case. It may be continued in the portion of the cellular tissue, situate between the fasciculi of the muscular coat, which occasions whitish intersections between these fasiculi, to the consideration of which I shall return presently: finally, the increased thickness and consistence may exist principally in the sub-peritoneal cellular membrane. This latter case may take place either separately by itself, or simultaneously with induration of the other great portions of the gastric cellular tissue.

Hypertrophy of the gastric cellular tissue may exist over the entire stomach, the parietes of which are then harder and thicker than in the normal state, and do not collapse when an incision is made into them. This, however, is not the most common case, and in most instances the hypertrophy is partial. The point of the stomach most frequently affected is the pylorus, either merely the circumference of the orifice of communication between the stomach and duodenum, or all the pyloric portion of the stomach. This same hypertrophy has also been observed around the cardia, but much more seldom; again, it may exist through the entire extent of the substance of the stomach. When hypertrophy of the sub-mucous cellular tissue exists towards the pylorus, or towards the cardia, it terminates abruptly in the very great majority of cases, where the duodenum and œsophagus commence; it may, however, pass the boundaries of the stomach, and extend to one or other of these portions of the digestive tube; in two cases where there was induration of the sub-mucous cellular tissue of the cardia, and surrounding parts, I saw this same induration exist in the lower third of the œsophagus, to such a degree as to produce a visible narrowing of this tube.

The muscular tunic of the stomach remains intact in a very great number of cases of chronic gastritis; at other times it is changed, and one of the three following cases is then observed: this tunic either becomes hypertrophied, or atrophied, or it disappears completely over a greater or less extent of the stomach.

Hypertrophy of the muscular tunic, to which several authors, and particularly Dr. Louis, have paid considerable attention, is scarcely ever observed separate: such, at least, is the result of my observation. We observe it to be accompanied by a similar hypertrophy of the cellular tissue which lines its two surfaces, and of that which is interposed between the fasciculi which form it. These latter, when viewed after making a section of the stomach, appear formed of a more shining, and of a harder tissue than in the normal state; if, as often happens, the cellular tissue interposed between them, participates in the hypertrophy, the following appearance is the result, which is so much the more deserving of remark, as it has given occasion to very extraordinary mistakes: white intersections, a species of septa, of a fibrous appearance and consistence, extend from the sub-mucous cellular tissue to the sub-peritoneal tissue, passing through the muscular tunic; they divide the latter into a series of lobules, which form a slight projection before the white lines which separate them. The real nature of the tissue which constitutes these lobules may be at first easily mistaken, in consequence of the modifications of texture which the muscular fibre underwent in becoming hypertrophied, its texture having now become closer and more condensed. These lobules, and the intersections of a fibrous appearance which separate them, have been generally described as the type of the scirrhous tissue, and persons have come to this extraordinary result of describing in cancerous affections of the stomach a muscular membrane as no longer existing, and as succeeded by an accidental tissue of a new formation, when this same muscular membrane was, on the contrary, hypertrophied.

But at the same time that the different portions of the gastric cellular tissue increase in thickness and consistence, there are some cases where the muscular coat, far from being hypertrophied, becomes less and less perceptible, and undergoes a real atrophy. Then by careful dissection we find amidst masses of indurated cellular tissue merely some colourless fibres, combined in small fasciculi, separated by large intervals, where no trace of them is any longer observed. In other stomachs, and always with the same appearance of the cellular tissue, the muscular tunic has completely disappeared to a greater or less extent, and in its place we find only some indurated cellular tissue, covered externally by the peritonæum, and internally by a mucous membrane more or less changed. What do we see in these different cases? Increased nutrition of one tissue, and diminished nutrition of another, but nothing to warrant our admitting a tissue of new formation. It is, moreover, a very general fact in the animal economy, that by virtue of a sort of *balancing of nutrition*, the greater activity acquired by one organ or tissue in its vitality, in its functions, or in its nutrition, occasions a diminished activity in the organic or animal functions of other parts. And to cite some facts analogous to that now under consideration, observe in the limbs how according as a tumour increases in the midst of the cellular tissue where it first commenced, the muscles which surround or pass through it often lose their colour and size, and are reduced to a number of thin pale fibres. In a case which I saw some months ago, the fatty cellular tissue behind the globe of the eye became so much increased, and at the same time indurated, that it filled the entire cavity of the orbit, and even pushed the eye-lids forward: in the midst of the whitish and hard mass thus formed, the globe of the eye was found as it were buried, and very much diminished in size, and formed of a very small sclerotic, containing the different membranes and humours, but only in a rudimental form; the transparent cornea appeared but as a black point on the anterior part of the sclerotic. To the latter membrane the six muscles of the eye were attached as usual; but they were very small, colourless, rudimentary as the eye itself in which they terminated; a careful dissection was required, so as not to confound them with the surrounding cellular tissue. There then as in the cases of chronic gastritis already mentioned, all the elements which enter into the structure of the organ were found; but being modified in their nutrition, they no longer possessed their ordinary proportions of volume *.

---

* The question has of late been very much discussed, whether scirrhus or cancer of the stomach, such as we have just described it, should be considered as one of the products of inflammation of this organ. It appears to us reasonable to admit that an inflammation may occasionally produce a cancer in the stomach, as it occasions one in the mamma in consequence of external violence. M. Bouillaud has published a case which clearly proves that cancer may become developed in the stomach after the ingestion of a certain quantity of nitric acid into this viscus. The subject of the case was a man thirty-four years of age, who had been addicted to various excesses, and had been suffering great domestic anxiety for some time. This person attempted to poison himself with nitric acid; he vomited a considerable portion of the poison immediately after swallowing it, and vomiting, burning thirst, and very high fever, became the chief symptoms during the first two or three days. The throat also was very painful, and deglutition very difficult; he was taken into the Charité; leeches were applied to the epigastrium and along the neck. It should have been observed, that at the time of his admission, on making him open his mouth, we perceived very evident traces of the action of the poison; in fact, the inner surface of the cheeks, the uvula, the velum palati, and fauces, were all covered with ulcerations of a greyish colour, bordering a little on yellow. The hoarseness of the voice, an acute pain along the œsophagus, which was increased during deglutition, induced us to think that the upper part of the larynx and the œsophagus were the seat of lesions similar to those described. By the use of leeches cataplasms, and demulcents, the alarming gastric symptoms, such as nausea, vomiting, epigastric pain, had considerably diminished. The features however were very sharp, pulse small and wiry, and from ninety-two to ninety-six; at the end of two or three weeks he thought himself sufficiently well to leave the hospital, his only complaint then being the sensation of a tightness or constriction towards the middle and lower portion of the œsophagus. At his departure we recommended him to be particularly exact as to his diet, as his stomach still evinced considerable irritability. Unfortunately, however, he had a very voracious appetite, and notwithstanding our advice to him, he indulged it. In three weeks after he returned again to the hospital, and stated that three or four days after he had returned home, the pain originally felt in the region of the œsophagus and stomach, again attacked him, and also the nausea and vomiting, accompanied by colic and constipation. He was now very much emaciated; nausea, vomiting, sour eructations, and considerable swelling of the epigastric region, were the principal symptoms observed. Tongue pale, sufficiently moist, breath fetid, pulse from sixty-six to sixty-eight, and the temperature of the skin natural; fifteen leeches were applied; anodyne cataplasms to the epigastrium, pills of carbon and

Atrophy of the muscular coat of the stomach may also coincide with a similar atrophy of the other coats. Simultaneous atrophy of the mucous, cellular and muscular membranes, is sometimes carried so far, that over an extent, which is often very considerable, namely, over the great cul-de-sac, the parietes of the stomach present the appearance of a very delicate tissue, formed of peritoneum alone, on which some vestiges of the other membranes are perceived here and there. Such cases have been very accurately described by M. Louis.

The different morbid changes which have been just described, do not form with equal frequency at all periods of life. Nothing is more uncommon, for instance,

magnesia, castor oil, which was vomited instantly after being taken. Still the epigastrium became more and more tumefied, and the tumefaction presented this peculiarity, that it was much more marked in the left hypochondrium, where there existed a sort of tumour, which made the ribs project; this was situated obliquely, towards the umbilical region, forming a curve, with its convexity to the left. Percussion yielded a dull sound, and there was evident fluctuation in the abdominal cavity. Pressure occasioned pain. The strength diminished every day, and the gastric symptoms remained nearly unchanged. There was evident effusion into the peritoneum, and also chronic gastritis. The acute pain of which the patient then complained in the abdomen, inclined us to suspect the existence of peritonitis. The pulse was now become very frequent and small, tongue frequently became dry, and the features were now sharpened. Calomel and opium pills were now given, a blister was applied over the epigastrium, mercurial frictions to the abdomen, after which, to our surprise, the effusion ultimately disappeared altogether. When the abdomen was now collapsed, we still observed a projection in the left hypochondrial region. The nausea and some slight vomiting still continued, and the emaciation of the patient went on increasing. Notwithstanding the vomiting the patient still called for solid food, and expressed an insuperable dislike for broths. He now again determined on leaving the hospital, having recovered some little strength, the abdominal effusion having disappeared, and he himself being dissatisfied at the small quantity of food allowed to him, when he expired suddenly about three months after he had swallowed the poison.

Post mortem.—The stomach was of an enormous size. It filled not only the left hypochondrium, but all the left side of the abdominal cavity, as far as the iliac fossa. This was evidently the cause of the tumefaction observed during life. When an incision was made into the parietes of this immense pouch, there issued from its cavity a sort of thick fluid very like chocolate, exhaling a penetrating acrid odour. The quantity of the contents of the stomach may be estimated at nearly two litres. Notwithstanding this enormous dilatation of the stomach, its parietes were attenuated only in one part, particularly towards the great tuberosity. The pyloric portion of the gastric mucous membrane was of a bright red colour, owing to a very fine dotted injection uniformly diffused over the part. This portion, contrasted with that which lined the great cul-de-sac, which was brownish, slate-coloured, and much less injected. In this latter portion the mucous membrane was softened, and completely destroyed in several points. Very near to the pylorus we observed the remainder of two oval ulcerations, situate one before the other. Their bottom was smooth and surrounded with a thick edge, about one-fourth of a line in depth, continuous with this same bottom. The process of cicatrisation was very far advanced in these two ulcerations; it was more advanced in another ulcer which was at the distance of about an inch from the two preceding, having a rounded form and being an inch in diameter; the bottom of this ulcer, formed of injected cellular tissue, was surrounded by a sort of puffiness. The orifice of the pylorus formed a kind of funnel, the duodenal opening of which was scarcely a line in diameter. Around this orifice the parietes of the stomach were indurated and thickened, the induration and thickening being continued towards the duodenum to the extent of about one inch and a half. The thickness of the parietes of the duodenum and pyloric circle was from four to five lines. The surface of the section made in the indurated and hypertrophied parietes was of a greyish white, shaded with a bluish tint; the tissue of these parietes presented a lardaceous appearance, grated somewhat under the scalpel when cut into, and we there found, in a word, all the characters of scirrhus of the stomach. In the portion of the duodenum thus tranformed into scirrhous matter, the presence of the mucous membrane was still recognised. The rest of the digestive tube presented no perceptible alteration. It was merely diminished considerably in size, and was really atrophied. There was a tolerable quantity of fæces of moderate consistence in the large intestine.

In the lower third of the œsophagus we observed several rounded depressions, the bottom of which was smooth and polished, surrounded by a small edge, which was from three to four lines in diameter. These depressions appeared to us to be cicatrised ulcerations. The œsophagæal mucous membrane was, in other parts, of a pale or greyish white.

than to observe scirrhous induration of the gastric cellular tissue before the age of thirty-five or forty. In this respect the following case seems worth reporting.

CASE 4.—*Scirrhus of the stomach in a person twenty-two years of age; first symptoms of the disease at the age of nineteen.*

A man, twenty-two years of age, felt at the age of nineteen acute pains in the epigastrium. From this time his digestion began to become deranged; he was annoyed with acid eructations, and a disagreeable sensation of weight towards the region of the stomach, as soon as he took food: he lost flesh, and became emaciated; still he did not vomit. At length, at the end of two years, he began to experience frequent nausea, and to vomit his food and drink from time to time. This vomiting, which at first occurred but rarely, became more and more frequent; it usually occurred three or four hours after meals. When the patient entered the Charité, he was in a frightful state of emaciation; he vomited almost every day; a well defined tumour was felt in the epigastrium, to the right of the xiphoid cartilage. The patient, after a short stay in the hospital, pined away and died. He had presented all the general and local symptoms of an organic affection of the stomach in its most simple form. The post mortem examination justified our diagnosis. The pyloric portions of the stomach, and the pylorus itself, were found to have degenerated into a scirrhous mass, with an admixture of encephaloid matter not softened.

This case, which is principally important in reference to the age of the subject, presents other circumstances well deserving attention.

The nausea and vomiting did not commence till two years after the appearance of the other symptoms, such as deranged digestion, acid eructations, etc.; those lancinating pains in the epigastrium, which are either entirely absent, or very slight in so many persons, were always very severe in our young patient. Was the nervous system, as being more active in him in consideration of his youth, more seriously affected, and, consequently, did he feel the pain more acutely? Be that as it may, the absence of vomiting should not make us disbelieve in the existence of a cancer of the stomach; for considerable experience has taught us that vomiting is not an essential symptom of this disease; that it may not show itself, principally in those cases where the cancer attacking the body of the stomach, the two openings of this viscus remain free.

The blood vessels of the stomach present some remarkable changes in chronic gastritis. For instance, we often find beneath the softened mucous membranes veins of a remarkably large size, evidently dilated, and which have become as it were varicose. The same change is observed in several other parts wherein an inflammatory process is going on for a long time; thus large varicose veins are often seen around old ulcers of the lower extremities. This dilated state of the veins sometimes continues for a longer or shorter time after the inflammation has ceased. In such cases it seems to be a phenomenon altogether passive, like dilatation of the veins of the conjunctiva after some cases of ophthalmia. But this dilatation may also be active, accompanied by thickening of the parietes of the vessel, and produced by a real process of inflammation, propagated from the mucous membrane to the capillaries, which pass through it, and from thence to the great venous truncs, which bring back the blood into the torrent of the circulation. The very interesting facts published by Dr. Ribes, have shown that in certain cutaneous inflammations, inflammation of the veins acts an important part; I have endeavoured to satisfy myself as to whether the same thing took place in certain cases of inflammation of mucous membrane, and more particularly with respect to the gastric mucous membrane. The following phenomena presented themselves in two cases; on laying open some large and dilated veins which ramified beneath the mucous membrane, which was red and soft in one case, and brown and hypertrophied in the other, I detected considerable thickening of their parietes, which opposed a sort of resistance to the scalpel, appeared as it were hard to the touch, and did not collapse after they had been divided. Now, we know that this thickening of the mucous parietes, with or without dilatation of their cavity, is one of the characters of chronic phlebitis. In another individual whose stomach was the seat of extensive ulceration, surrounded with soft and reddish vegetations formed at the expense of the mucous membrane, large veins were seen in great numbers around this ulceration; they were situated in the sub-mucous cellular tissue. One of them was remarkably hard, and its appearance resembled that of certain small veins of the extremities which have been obliterated by old clots. It was distended and filled with a solid mass of a dark red colour, like wine lees, mixed with a more liquid substance of a purulent appearance. On tracing this vein as near as possible to the ulcer, it was seen that the venules which went to form it were hard like itself, obstructed by solid matter, and resembling small nodosities.

The part which the blood-vessels of the stomach sometimes take in its inflammation may also be proved by other facts. These facts aré those in which blood-vessels have been found ruptured, and more or less open at the bottom of an ulcer. What can be the cause of this rupture of the vessels? The same no doubt as that which has caused the successive destruction of the other tissues, and which occasioned the formation of an ulcer. Thus, the vessels which ramify on the surface of a pulmonary cavity, are perforated equally with those contained in the bands which pass through it. We know, besides, that in these vessels the adhesive is much more common than the ulcerative inflammation, whence it happens that their obliteration is much more common than their perforation. Does the same thing occur around and at the bottom of chronic ulcerations of the stomach? It is a fact worth remarking, that in some cases where vessels have been found with very open mouths at the bottom of one of these ulcerations, there had been no hematemesis during life, nor any blood effused into the stomach.

The lymphatic system of the stomach does not always escape the effects of chronic inflammation of this organ. In this system we have to consider, first, the vessels, secondly, the glands, into which these vessels enter, and from which they pass.

I no longer reckon those cases where in different points of the intestine, I found lymphatic vessels filled with pus, or a substance of more consistence than ordinary pus, friable, and as it were of a tuberculous character, passing from an ulcer; these lymphatic vessels, thus distended, entered the mesentery, and sometimes disappeared there insensibly, whilst sometimes they might be traced as far as a gland. In several cases there was not only distension of the vessel by foreign matter, but there was also very evident thickening of its parietes, which had lost their usual transparence. Once only I found a similar state of the lymphatics in the stomach. One of these vessels, filled with whitish matter, passed out from an ulcer situate towards the middle of the great curvature of the stomach, passed all along this curvature, and ceased to be visible towards the great cul-de-sac.

The ganglions, which receive several of the lymphatic vessels of the stomach, and which exist, as every one knows, along its two edges, appear less liable to become engorged after acute or chronic gastritis, than the glands of the mesentery are after enteritis. However, in some cases of chronic gastritis, they are found to have become very much enlarged, and to form considerable tumours. Some of the phenomena and of the symptoms, which were supposed to depend on the stomach, have sometimes depended on these tumours. Thus, during life they may be appreciated by pressing it over several points of the epigastrium, and may present the same varieties of position, form, size, and mobility, as the tumours belonging to the stomach itself. At other times, it is the ganglions situate either along the diaphragmatic edge of the stomach, or principally behind the stomach, in the posterior epiploic cavity, which acquire an enormous size, at the same time that their tissue undergoes different species of alterations. They may then displace the stomach, push it forward, compress it between them and the abdominal parietes, and contribute as much to the difficulty of digestion, as chronic inflammation of the stomach itself. At other times the pylorus is found surrounded, compressed, actually obstructed by these ganglions, transformed into large tumours ; thence arises vomiting, such as is observed when, for instance, considerable induration of the submucous cellular tissue of the pyloric ring, and the parts around it, opposes the free passage of the food from the stomach into the duodenum.

Among the anatomical structures of the stomach, which have been, hitherto, too much neglected in the anatomical study of the diseases of this organ, we must place the nerves. There is no doubt but that more than one gastric affection is occasioned by alterations of them. But is this alteration appreciable by anatomical investigation? To this I can answer, that I have many times dissected with great care the pneumogastric nerves in their trunks and ramifications on the two surfaces of the stomach, as also the numerous branches which it receives from the great sympathetic ; I have dissected them both in healthy stomachs, as also in those which presented most of the changes already described ; and have, hitherto, been able to obtain but mere negative results ; and in cases of morbid alteration of the stomach, which differed most widely from each other, I have not found any appreciable difference in the colour, size, or consistence of the nerves distributed to them. By this, I do not mean to say, that these nerves are always exempt from appreciable alteration ; but as I have examined fifty-three bodies at the Charité, in reference to this subject, without discovering any thing, I think myself warranted in concluding, first, that these alterations are uncommon ; secondly, that they are not necessarily connected with any of the numerous organic alterations with which the stomach may be affected. However, experience does not suffer us to doubt, that though the alterations of the nerves of the stomach are not in general of such a nature as that they can be appreciated by dissection, these alterations are still not the less real and frequent. There is no doubt but that, on the one hand, the numerous sympathies transmitted by the stomach to the different organs, are transmitted by means of its nerves, which are so remarkable for their distribution and their numerous connexions ; neither is there any doubt but that, on the other hand, among the infinitely varying modifications of function which the stomach may present, and which simulate more or less completely the symptoms of acute or chronic gastritis, several depend on a vitiated influence of the nervous centres on the stomach ; thence, in some persons, we observe various disturbances of digestion ; in others vomiting ; in others again epigastric pain, etc.

Chronic inflammation of the stomach, whatever be the form which it has assumed, may terminate in gangrene, but much less frequently than has been stated. The case wherein I have most frequently met this gangrene, is that where the stomach was the seat of an old ulceration, with fungosities around it and in its bottom. It was this ulceration itself which the gangrene had attacked ; it was then found covered with a grey or blackish detritus, which was raised like pap by the scraping of the scalpel, and which exhaled a most fœtid odour. Towards the termination of life there was a sudden prostration of the strength ; the countenance had rapidly assumed a cadaveric appearance ; frequent hematemesis had taken place ; this group of symptoms had probably coincided with the period when the ulceration of the stomach had commenced to be attacked with gangrene. Such is also the termination of several ulcerations and degenerations of the neck of the uterus ; there is then also very often a great resemblance between the alteration of the stomach and that of the uterus. It is in this way also, that in more than one phthisical patient, gangrene comes to attack the parietes of cavities, which are found to become changed into a black and fœtid mass of corruption.

I have much more rarely found the stomach attacked with gangrene, when it had not been previously ulcerated. Sometimes, however, I have found portions of mucous membrane gangrenous, and changed into eschars over tumours formed by indurated sub-mucous cellular tissue.

The stomach, when attacked with chronic inflammation, undergoes, in its form and size, various modifications, which may be appreciated during life through the abdominal parietes. I shall here consider chiefly the changes of size which it may present. The cases in which the cavity of a hollow viscus is seen to become very much enlarged beyond its natural condition, are numerous and varied, with respect to the causes which occasion this enlargement. Thus the dilatation sometimes takes place in consequence of an obstacle at the orifice, through which the liquids introduced into the cavity of the stomach should naturally pass out; this is sometimes the case with the heart, urinary bladder, gall-bladder, &c. The parietes of the cavity of these organs then either retain their natural thickness, or become hypertrophied, or are attenuated. Sometimes, without any obstacle opposing the free exit of the fluids, such a dilatation is observed to take place, the parietes of the cavity still presenting one of the three conditions which existed in the preceding case. In this case, all the hollow organs may be found, the heart, bladder, arteries, veins, bronchi, &c. Like to all these organs, the stomach may be very much dilated, may become large enough to fill all the abdominal cavity, whether there exists an obstacle at the pylorus, which is the most common case, or whether the parietes of the pyloric region present considerable induration of the cellular tissue, with atrophy of the muscular coat, the pyloric orifice at the same time, far from being contracted, being found, on the contrary, wider than natural; or whether, in a word, as is the most uncommon case, the parietes of the stomach present no other change except injection, or softening of the mucous membrane.

Thus, then, of these three cases, there is but one in which the dilatation of the stomach, and the great enlargement of its cavity co-exist, with an obstacle to the free passage of food from the stomach into the duodenum. It is possible, however, as I shall have an opportunity of stating presently, that, in the second case, where the pyloric orifice is dilated instead of being narrowed, atrophy of the muscular membrane, at this part of the stomach, may be as powerful a cause, as some tumours of the pylorus, to prevent the free exit of food from the stomach.

The three following cases will furnish remarkable instances of dilatation of the stomach carried to an extreme degree.

In the first of these cases, there is an obstacle at the pylorus which opposes the passage of the food from the stomach into the duodenum; in the second it is the latter intestine which is the seat of the obstacle; in the third there is not an obstacle at any point to the free course of the food, and still, notwithstanding this absence of mechanical causes, the stomach had undergone enormous dilatation.

Case 5.—*Great dilatation of the stomach, which filled the entire abdomen: induration of the parts of its pyloric portion, with atrophy of the muscular tunic, the usual size of the pylorus still remaining.*

A woman, sixty-five years old, very much emaciated, began to evince, towards the month of June, the symptoms of an organic affection of the stomach; difficult digestion, alternation of voracious appetite and complete anorexia, acid eructations, nausea, frequent vomiting for several hours after meal, pain in the epigastrium.

These symptoms became every day worse. In the March of the following year she entered the Charité. She was then reduced to the last stage of marasmus. The stomach might be distinctly traced through the abdominal parietes; it evidently occupied the principal portion of the abdomen. Its colic edge rested immediately on the pubis; its diaphragmatic edge described a curve, the concavity of which looked upwards, and which, proceeding from the epigastrium, descended as far as the umbilicus, then reascended towards the right hypochondrium. She felt towards the part where the pylorus might be supposed to lie, an habitual pain, which at intervals became more severe. She vomited almost every forty-eight hours a great quantity of brownish liquid. After vomiting the tumour formed by the stomach diminished, but did not disappear. The vomiting was without any effort, almost as a simple regurgitation. The patient was often desirous to get food; but she had scarcely swallowed a few mouthfuls, when she was satisfied; there then came a sensation of insupportable bitterness in her mouth. She continued passing a great quantity of gas by the mouth.

The appearance of the tongue was natural; thirst very moderate, stools scanty; pulse not at all frequent, and very weak; the skin dry, and not at all hot. The origin of the disease could not be referred to any appreciable cause. This woman sunk rapidly, and after being about fifteen days in the hospital, her features changed, her pulse ceased to beat, her extremities became cold, and she expired without a struggle, having retained the free use of her intellects to the last moment.

Post mortem. The brain and lungs were sound. On raising the abdominal parietes, we perceived the stomach occupying all the entire cavity. It descended at first vertically from the epigastrium to near the left iliac fossa; it then turned obliquely from left to right, and from above downwards towards the right iliac fossa; within this space the great curvature was concealed by the pubis, and rested on the uterus; it then ascended towards the right hypochondrium, where it was continued with the duodenum. The remainder of the intestinal canal was concealed by the stomach, with the exception of some convolutions of the small intestine, which occupied the right flank, and of the sigmoid flexure of the colon. The stomach contained an enormous quantity of brown fluid, similar to that which had been vomited during life. The internal surface was every where perfectly white, but the mucous membrane was also very soft on every part. To the extent of four fingers' breadth on this side of the pylorus this membrane no longer existed.

Where the solution of continuity of the mucous membrane commenced, it formed an irregular whitish swelling (bourrelet). The bottom of the ulcer so formed, consisted of cellular tissue, which was four or five times, at least, its natural thickness, and was divisible by the scalpel into a tissue of a pearly white appearance. The free surface presented a blackish grey colour. Over this same extent no trace of muscular fibre was any longer observable. The pyloric aperture was still large enough readily to admit the extremity of the index finger. The remainder of the intestinal canal was healthy.

How are we to explain in this case the accumulation of food in the stomach, and its enormous distension, the pyloric orifice being free, and even larger than natural? This orifice, when observed in the dead body, is really closed, and a certain resistance must be overcome in order to introduce the extremity of the little finger into it. If we examine it in the living body, we also see that it remains habitually closed, like the sphincters of the bladder and rectum. But during digestion, and when the chymified food has passed into the duodenum, a new phenomenon presents itself. The muscular fibres of the stomach present a very manifest motion of contraction, which, commencing towards the middle of the body of the stomach, is continued as far as the first curve of the duodenum; this contraction changes the state of the pylorus, overcomes its resistance, which is entirely passive, so that the muscular contraction which has been just described, is at least one of the principal causes, if not the only one, which propels the chyme into the duodenum. Hence it follows, that if in the pyloric portion of the stomach there be no longer any fleshy fibres, one of the most powerful causes of the expulsion of the food ceases to act, and the latter passes into the duodenum, not without considerable difficulty. Such is the mode of accounting for the fact in question, supposing it to be granted that the enormous dilatation of the stomach recognises for its cause the distension it suffers from the unusual accumulation of a great quantity of food. But is this cause as powerful as has been said? We may remark on the one hand, that such a dilatation may take place without there being any appreciable cause to prevent the passing of the food into the duodenum. (See the next case.) And on the other hand, it may be observed, that very considerable obstacles often exist at the pylorus without the stomach being perceptibly dilated.

CASE 6.—*Cancer of the duodenum; cicatrix in the stomach; dilatation of the latter organ, the colic edge of which almost touches the pubis.*

A woman, seventy-four years of age, entered the Pitié on the 1st of November, 1832. She had been for a long time labouring under indigestion, and vomited from time to time. She remained for twelve days in the hospital; during this time she did not vomit; her tongue was constantly dry, and of a smooth, uniform red appearance. She gradually became weaker, and died.

Post mortem.—The stomach had attained an enormous size. It occupied almost the entire abdomen; its colic edge was separated from the pubis only by a space of about two inches. The great *cul de sac* adhered to the abdominal parietes by old cellular bands. It contained about a litre of a greyish liquid. Its mucous membrane was every where pale, and of good consistence. Beneath it the cellular tissue was remarkably thick, and the muscular coat was evidently hypertrophied. Thus the dilatation of the stomach had not been purely passive. Towards the great *cul de sac* an extraordinary puckering of its coats was observed: the fasciculi of the muscular membrane terminated as so many radii in a white and thick point, above which the mucous membrane was, as it were, puckered. This change of structure resembled the cicatrix of an old ulcer.

In the duodenum, two inches beyond the pylorus, there existed a cancerous vegetation which went all round the intestine like a ring; it was, as it were, a second pylorus, which afforded but a very narrow passage to the contents of the intestine. The ductus choledochus, which was considerably dilated, opened into this cancerous mass.

In the jejunum and ileum a general slate-coloured tint of the mucous membrane was observed. The termination of the ileum and the large intestine were filled with a blackish grey substance, resembling clay. Reddish bands appeared on the internal surface of the colon. The tissue of the liver was firm, and of a bright red colour; the spleen was small and dense. The left kidney contained some small black calculi, lodged in kysts, within the cortical substance; around them was observed a matter equally thick, but soft. Two other small calculi were found in one of the calices.

CASE 7.—*Very considerable dilatation of the stomach, the colic edge of which touched the pubis, without any other alteration of its perietes except a little softening of the mucous membrane towards the great cul-de-sac.*

A woman, twenty-three years of age, who had always enjoyed good health, left the provincial town in which she had resided in consequence of a reverse of fortune, and came to reside with her family to Paris. Her health soon became perceptibly changed, her appetite became diminished, her digestion became difficult, and towards the month of February, 1821, after a fright which occasioned long continued syncope, she began to vomit both her meat and drink. She usually did not throw them up till several hours after swallowing them; however, she became emaciated, and weakened gradually.

Leeches were applied over the epigastrium; magnesia, and various antispaspasmodic medicines were given. From the month of December the vomiting became more frequent, the strength diminished rapidly, and the menses stopped. From this time she gave up her occupation. She entered the Charité, February 14, 1822, and presented the following state: last stage of marasmus, no complexion; vomiting of both solid and liquid food, more or less, immediately after its being taken into the stomach; slight pain in the epigastrium, which was soft, and presented no perceptible tumour, neither did any other part of the abdomen present any; appearance of the tongue natural, habitual constipation, pulse very weak and slightly frequent, skin dry and not at all hot, breathing free.

This patient did not present any new symptom up to the commencement of March; the demulcent drinks given to her were all rejected; neither could she retain the light food allowed her from time to time. On the 12th of March the pulse became accelerated, the tongue dry, and she died on the 14th of March.

Post mortem.—A little serum was found in each lateral ventricle. The pleuræ costalis and pulmonalis were connected by long and dense cellular bands. The stomach, which was very much dilated, covered most of the abdominal viscera; its colic edge touched the pubis; it was the great cul-de-sac that was most dilated. The cavity of the stomach was filled by a greenish yellow liquid; its internal surface presented a slight rose tint, marbled in some points; towards the spleen it was whiter; was also a portion of mucous membrane, about the size of the palm of the hand, was very much softened, and might be raised like a pap by slight scraping, in every other part it was of the natural consistence. The parietes of the stomach were in general thin and readily torn; the muscular layer was very much attenuated. The small intestines, which were very much contracted, like a dog's intestines, were almost entirely lodged in the cavity of the lesser pelvis; their internal surface was pale. The ascending colon occupied its ordinary place. The transverse colon had followed the great curvature of the stomach, and was situate behind it; its internal surface presented to the extent of about four fingers breadth a violet red colour, residing in the mucous membrane, which was a little thickened. Some red patches of the same kind were observed in the descending colon; in every part this intestine was very much contracted. The sigmoid flexure of the colon, and the rectum, which presented no alteration, were filled with hard fæces. Thus there was no diarrhœa, though several portions of the large intestine were evidently inflamed. The liver, which was considerably enlarged, extended on the left as far as the spleen; it pressed the diaphragm as far as the fifth rib. Inferiorly it passed a little beyond the edge of the false ribs; its tissue was healthy. When the obstacle to the passage of its contents exists in any other point of the intestine, we equally see the portions of the digestive tube situated above the contracted part more or less dilated. Instances of this will be seen in the two following cases, the details of which we thought it right to present, in consequence of the interest which they possess in other respects also.

CASE 8.—*Scirrhous degeneration both of the parietes of the stomach and of the colon—Symptoms of intestinal strangulation—Considerable dilatation of the portion of the large intestine above the contraction—Depression of one of the cerebral hemispheres by a fibrous tumour.*

A woman, forty-eight years of age, entered the Charité on the 6th of October. For about twelve months previous to this time her health began to become deranged. Her digestion was often painful, though she did not vomit; she frequently experienced the most complete disrelish for food of every kind; since the same period she scarcely ever had an alvine evacuation, except by means of lavements. She had gradually lost flesh and strength; still she continued her ordinary occupation; but on the 20th of September her abdomen became painful and tympanitic, on the following day obstinate constipation set in, which could not be overcome by lavements; the latter was passed immediately after being taken, and brought nothing with them. The constantly increasing size of the abdomen alarmed the patient, and determined her on entering the hospital.

When we saw her for the first time, her countenance was pale, and her features sharp. She complained of general pain over the abdomen, which was more severe in the right flank, and was increased by pressure. The abdomen, which was enormously distended, sounded like a drum when struck. The patient began to vomit for the first time during the night. The appearance of the tongue was natural; a considerable quantity of gas was passed by the mouth, none by the anus. There had been no alvine evacuation for the last seven or eight days. The breathing was short and hurried; pulse small and frequent; skin not hot. The tympanitic state of the abdomen, the total absence of alvine evacuations, and the vomiting, seemed to M. Lerminier to indicate the existence of internal strangulation, or at least of some obstacle to the passage of the food towards the termination of the large intestine. The abdomen was covered with emollient fomentations, and with embrocations of camphorated oil of camomile; a draught of oil of sweet almonds was given; a lavement of three ounces of castor oil, and warm baths. In the course of the day the draught and ptisan were vomited; the lavements were expelled as soon as given; no stool. The three following days these symptoms still continued; the tympanitic state of the abdomen still increased; the breathing was become more difficult. *Purgative lavements of senna and sulphate of soda.* On the morning of the 11th of September the countenance was of a violet colour; features changed, imminent suffocation; coldness of the extremities; pulse thready; intellects perfectly clear; tongue natural; vomiting of yellow, acid matters during a great part of the night. *Lavement consisting of an infusion of two drachms of tobacco leaves; warm bath.* This lavement equally ineffectual as the former. In the course of the day the dyspnœa increased: towards four in the evening, just when the patient was leaving her bed in order to go into the bath, she expired suddenly.

Post mortem 17 hours after death.—The middle portion of the upper surface of the left cerebral hemisphere presented a deep depression, which contained a rounded tumour, about the size of a nut, presenting all the characters of the accidental fibrous tissue, and developed between the dura mater and the arachnoid. The cerebral substance, forming the parietes of this cavity, was healthy. Nothing remarkable in the remainder of the encephalon. The right cavities of the heart were distended by a dark, semi-liquid blood. The lungs were engorged, and of a brownish colour. The capacity of the chest was very much diminished; the upper surface of the diaphragm was raised to the level of the fourth rib; no gas escaped into the peritoneal cavity. The large intestine was enormously distended; it concealed almost all the rest of the viscera; one would have said it was the large intestine of a horse. This prodigious dilatation was continued as far as the sigmoid flexure of the colon; there the intestine became suddenly contracted, and retained a small calibre as far as the anus. The little finger, when introduced into the place where the contraction commenced, passed it with difficulty; two inches lower the intestine resumed its ordinary size. It was soon ascertained that this obstacle to the free passage of the finger was owing to the presence of a fungous tumour, which went round the intestine like a ring; its edges were raised like those of some species of mushroom; the cerebriform degeneration of the mucous membrane and of the cellular tissue subjacent to it, had given rise to it. Below it the intestine was white and empty. Above it contained a great quantity of gas, and of liquid greenish matter. The mucous membrane was slightly injected through the entire extent of the large intestine. We were not a little astonished to find on the posterior surface of the stomach, nearly at an equal distance from the cardia and pylorus, a second cancer, entirely similar to that of the intestine. It was a little broader than a five-franc piece.

The mucous membrane of the remainder of the stomach was healthy. Five or six small rounded bodies, each the size of a filbert, and of a stony consistence, formed so many appendages around the body of the uterus, to which they held by a cellular prolongation.

The tympanitic state of the abdomen, and more or less obstinate constipation, are no doubt rare phenomena in persons whose colon or rectum are cancerous. They existed for a long time in this patient. But it is, I think, extremely rare to see these symptoms suddenly become so severe as to similate with those of strangulated hernia. They can only be accounted for by admitting that the tumour, after having for a long time made imperceptible progress, suddenly assumed a sort of acute course in its development; all the phenomena observed in our patient may thus be perfectly accounted for. Death was the result of the constantly increasing difficulty of breathing. When we consider how little air the lungs could still receive towards the termination of life, we shall not feel surprised that a slight movement, by accelerating the circulation, was sufficient to complete the asphyxia. The increased quantity of blood which flowed to the lung at this moment being no longer proportioned to the quantity of air which might act on it, sudden asphyxia must be the result of this disproportion. The more acute pain which the patient referred to the right flank seemed to indicate that there also the obstacle or strangulation existed. If it had been possible to ascertain that the lesion was situated so close to the rectum, one might have tried the introduction of a sound with advantage. Let us now direct our attention to the other lesions discovered. First we find the instance of an ulcerated cancer of the stomach, the existence of which was indicated only by a little difficulty in digestion, and by frequent returns of anorexia; the occult nature of this cancer was conformable to its state. How was it that a tumour so large as that seated in the cerebral membranes, and which had made a considerable depression in the brain, did not indicate its existence by any marked symptom? We shall probably find the cause of this absence of symptoms both in the slowness with which the tumour was developed, and in the portion of the brain which was compressed by it. A case similar to the preceding, with respect to the lesion of the intestine, and the symptoms occasioned by it, has been reported by Dr. Baillie, in the Medical Transactions, vol. 1.

Case 9.—*Symptoms of typhoid fever; all at once signs of internal strangulation, and death—Twisting of the intestine around the mesentery, towards the commencement of the jejunum—Remarkable dilatation of the duodenum.*

A man, twenty-seven years of age, of a strong constitution, frequently experienced abdominal pains from his earliest infancy; he often had diarrhœa and bilious vomiting.

On the 29th of June, after having walked a great deal during the day, and having become chilled, he was seized at night with profuse diarrhœa, which continued on the following days. On the 6th of July he felt unusually hot, and perspired in the evening, which symptoms, as also the diarrhœa, continued till the 9th of July; he then entered the Charité, and presented the following state:

Air of stupor, sub-orbital pain, face pale, eyes heavy, tongue covered with a whitish thick coat; thirst, anorexia, bad taste in the mouth; ten stools within the last twenty-four hours, like water coloured yellow; abdomen soft and free from pain, pulse moderately frequent, (barley ptisan, with tartaric syrup, linseed lavement). On the three following days the prostration went on increasing; the pulse, which was scarcely frequent in the morning and during the day, became a little accelerated in the evening; at the same time the temperature of the skin was raised; the purging neither diminished nor increased. (Same prescription).

On the 13th the tongue became dry, the frequency of the pulse increased, numerous spots of a pale rose colour, of the breadth of a lentil, slightly projecting above the skin, sensible only to the touch, appeared on the anterior part of the chest.

On the 14th they extended to the abdomen. The purging was considerably diminished (three stools). There was almost complete apyrexia; but the tongue retained its dryness; the teeth began to be encrusted; the prostration was increased; the skin of the face assumed that earthy tint which accompanies and characterises the adynamic state. (Blisters to the legs.)

15th and 16th. Same state (demulcent ptisan, emollient lavements). 17th. Delirium in the night. The blisters on the legs were dry; a new one was placed on one thigh.

18th. There was still delirium in the evening. On the morning of the 19th we found the patient better than on the preceding days. The tongue was moist and looked well. Only two stools had been passed since the last twenty-four hours. His intellects were clear. His strength seemed to rally; temperature of the skin was natural; pulse but 65. We had scarcely left the patient in this improved state, when he was seized all at once with a pain in the abdomen, so severe as to make him scream; he referred the seat of it principally to the parts around the umbilicus; pressure neither increased nor relieved it. This pain lasted for an hour, when we saw him again. The features were very much altered, and indicated the greatest anxiety; still the pulse was not accelerated. A half an hour after, towards ten o'clock, the pain still continued, when the patient vomited spontaneously about a pint of bilious matter; he was instantly relieved. Towards noon the abdominal pain was again renewed with great violence. At four o'clock a second vomiting took place, similar to the first with respect to the nature and quantity of the liquid; the pain disappeared as after the former vomiting. In the evening we found the patient calm and tranquil, and entirely free from fever. He had been three times at stool since morning; in the night he had a little delirium.

On the morning of the 20th he suffered no pain, but his spirits were very much cast down; stupor very great; the spots were effaced, they were pale, less numerous, and no longer projected above the skin. Tongue red at the apex, and clammy; pulse still slow and skin cool. (Infusion of quinquina, with tartaric syrup. Gum potion, with half an ounce of extract of quinquina; a little wine. Aromatic fomentations to the abdomen; linseed lavement; rice-water for drink.) At two o'clock in the afternoon the abdominal pain re-appeared; at six o'clock he vomited a great quantity of green bile; he felt relieved. At eight at night the pain re-appeared, but was more moderate; the skin was moist and cold; the pulse, which was very small, had become frequent. At nine o'clock, though the temperature of the skin was not raised, he complained of feeling an intolerable heat in every part of him; he threw off the bed clothes. Since morning he had had but one stool after the lavement; at night he was not delirious.

On the 21st the belly was generally painful on pressure, particularly a little above the umbilicus; the pulse was very small and scarcely 60. A few pale spots were scattered over the abdomen. Suddenly an acute pain came on, which lasted, however, for only a few minutes. At eight o'clock the pain again increased; it ceased, or, at least, was very much diminished, after a copious vomiting of green bile; two pints, at the very least, were expelled from the stomach at once. The quinquina was stopped. (Tamarind whey, barley ptisan, emollient lavement, aromatic fomentations, two blisters to the legs.)

During the day the pain and vomiting were several times renewed. In the night he became delirious. On the morning of the 22nd his voice was quite gone. he was extremely weak, his countenance was pale and cadaverous. The tongue was moist and coloured with bile. The abdomen was not tense. We touched it without at first occasioning any pain; but on further pressure an acute pain was instantly felt. The nose, hands, and feet were cold. He vomited several times during the day; he had two stools. (Blister over the epigastrium, seltzer water, anti-emetic potion of Riviere.)

On the 23rd the surface of the entire skin was cold. He vomited frequently. On the 24th the pulse was thready and scarcely perceptible. His skin was now deadly cold, still his intellects were quite clear; he was still strong enough to raise himself up on his elbow. On the evening of the preceding day he got out of bed to go to stool; he felt no abdominal pain for the last twelve or fifteen hours. He had some hiccup during the night. He died in the evening.

Post mortem 48 hours after death.—The external surface of the body was scarcely colder than during the last twenty-four hours before death. A little limpid serum was found in the lower part of the lateral ventricles. The heart and lungs presented nothing remarkable.

Abdomen.—The stomach, which was distended with a great quantity of green bile, touched the umbilicus with its great curvature; the mucous membrane, which was of a grey slate colour in the splenic portion, and of a rose tint in the pyloric portion, was rather soft in every part; but had it not been subjected to a sort of maceration by the great quantity of liquid which was in contact with it for more than forty hours? The duodenum had become so much enlarged, that it readily admitted the thumb into it. The jejunum, at its origin, was rolled on itself several times, and was embraced by the mesentery, which pressed it strongly like a cord, whilst it, in its turn, likewise compressed the mesentery: the latter was rolled, like the intestine, several times on itself from right to left; on turning it three times from left to right, the mutual strangulation of this membrane and of the intestines was removed.

The superior mesenteric artery and vein resembled a very tense cord from which the strangulated parts seemed as it were suspended; lower down these vessels were, as it were, included in the strangulation; all the rest of the small intestine also, nourished by these vessels, presented a very deep brown colour, arising from the mechanical stagnation of the venous blood in its parietes; the latter still retained their ordinary consistence: the parietes of the large intestine were white. Beneath the strangulated parts a tumour existed about the size of an ostrich's egg, of a brownish red colour, formed by some lymphatic glands and sub-peritoneal cellular tissue considerably engorged. The mucous membrane of the small intestine, which was of black jet colour, presented an immense number of miliary granulations; some were also found, but in less number, on the mucous membrane of the large intestine. The liver, which was of the ordinary size, was readily torn; the gall-bladder contained a small quantity of yellow bile. Nothing remarkable in the other viscera.

When the patient who forms the subject of the preceding case entered the Charité, he presented nothing but the ordinary symptoms of continued fever; but, what was very remarkable, whilst the prostration, stupor, dryness of the tongue, the delirium which returned every night, and the typhoid eruption, indicated a severe disease; the circulation remained in its natural state, except that two or three times we found the pulse a little frequent and the skin a little hot. The ancients had noticed this rare pulse in malignant fevers, and they considered it as a most unfavourable symptom *.

However, most of the bad symptoms had disappeared, and a favourable prognosis might be formed, when the symptoms of intestinal strangulation appeared. We have carefully noted, in the progress of the case, the extraordinary intermissions of the abdominal pains, and their diminution after each fit of vomiting. We have remarked the almost cadaveric coldness of the entire cutaneous surface for more than twenty-four hours before death, at a period when the patient was still strong enough to raise himself up and leave his bed. The circumstance of the abdomen still remaining soft, the character of the pain which was not increased by pressure, distinguished the symptoms of this strangulation from those of a peritonitis.

---

* See the preceding Part.

We shall not attempt to account for the mode in which those strange and almost inextricable knots of the small intestine around the mesentery occasioning their mutual compression could have been formed; we can scarcely account satisfactorily for simple intestinal intus-susceptions; but we may ask whether the patient did not carry about him an almost congenital predisposition to the strangulation of which he died? Thence probably the frequent abdominal pains, and the vomiting to which he was subject from his infancy. Is it not to the presence of a partial obstacle to the passage of its contents, which must have existed for a considerable time back, that the enormous size of the duodenum was owing? Could this intestine have acquired such enormous dimensions in a few days? This we deem so much the less probable, as its valves were not even effaced. The bile collected in it, as in a great reservoir, and then passed into the stomach, from which it was expelled by vomiting.

ARTICLE II.

Symptoms of chronic gastritis.

These symptoms are of three kinds: some are merely local, and consist in a greater or less disturbance of the functions of the stomach; others arise from the alteration of the general progress of nutrition, an alteration which is the necessary consequence of the gastric affection; others again are purely sympathetic.

Here an important question presents itself: are the extremely varied lesions which we have described in the two preceding articles, each indicated by special symptoms? We have no hesitation in answering in the negative. With the exception of some circumstances, which are the mechanical result of the obliteration of the cardia or pylorus by a tumour, the same phenomena most commonly indicate during life these organic alterations of form and structure which differ so much from one another.

Thus, for instance, it is a great mistake to suppose, that what are called lancinating pains accompany more particularly the lesion usually designated cancer of the stomach. On the other hand, we think that we may infer from a considerable number of cases, that such pains are but very seldom the result of this affection. Then the existence of lancinating pains is one of the circumstances which we took care to point out in the person who forms the subject of the fourth case. It appears to us very probable that the writers who have given these pains as a characteristic sign of cancer of the stomach, admitted them only by analogy with that which they observed in cancer of the mamma. Among the persons in whom we detected, after death, the existence of the different forms of gastric cancer, whether scirrhous or encephaloid induration of the tissues subjacent to the mucous membrane, or fungous vegetations of this membrane, or ulcerations with destruction of the tissues, the bottom of the ulcer being formed by the liver or pancreas; of these, I say, some had never complained of pain in the epigastrium; in others it was merely a sensation of constriction or habitual weight towards this region; at other times it was produced only by pressure; whilst at other times the epigastrium might be pressed with impunity. In several instances the pain was felt only when food was taken into the stomach.

If now we compare the patients labouring under what are called cancerous affections of the stomach with those who had only what is recognised as a chronic gastritis, we shall not find either in the character or intensity of the pain any sign by the help of which we could distinguish with certainty the latter disease from the former.

Shall we seek more certain distinguishing signs in the varied disturbances of digestion? We shall not find any thing more satisfactory. Thus, to cite the two extreme cases, we have seen persons who, during life, had no other sign of gastric disease except anorexia, and at most a little constriction or uneasiness in the epigastrium after they had eaten, and in whom we found immense cancerous ulceration in the interior of the stomach, or else extensive scirrhous induration of its parietes. On the contrary, we have seen other individuals, who experienced a much more painful sensation in the epigastrium after eating, who vomited either sour fluid in the morning and at different periods of the day, or their food, who had frequent acid eructations, and yet, in these, what did we find? Nothing but red, brown, slate-coloured thickening of the mucous membrane, or else greater or less softening of this membrane.

Will the nature of the vomiting throw more light on the matter? It has been said that hematemesis was exclusively connected with the existence of fungous vegetations, of cancerous ulcers, of softened encephaloid masses developed within the stomach. It has been said that these same lesions also produced that vomiting resembling soot or coffee grounds, which is observed rather frequently, and in considerable quantity, in persons labouring under a chronic affection of the stomach. No doubt such vomiting occurs frequently when the stomach is the seat of one of those lesions just mentioned; but it may also present itself with very different morbid changes, and thence it no longer possesses any value to characterise any of them. We have accordingly ascertained its existence; 1st, in patients whose stomach presented, in its mucous membrane, no other change than slight injection or softening, with greater or less scirrhous induration of the subjacent tissues; 2dly, in others, whose gastric mucous membrane was hypertrophied with grey or brownish colouring, the subjacent tissues being intact.

With respect to the general symptoms, whether those that are sympathetic, or those that result from the disturbance or total abolition of the process of chymification, they do not appear better adapted than the local symptoms to distinguish with certainty the different organic alterations of the stomach from one another. It must, however, be admitted, that the pale yellow tint of countenance, emaciation, and wasting away, are particularly marked in the case where the stomach is the seat of a scirrhous or cancerous affection properly so called.

From those observations it follows that, with the exception of the case where a tumour is felt through the abdominal parietes, there exists no certain sign to distinguish what is called, in ordinary medical language, a cancer of the stomach from that which is called chronic gastritis.

Thus with respect to their symptoms as well as their anatomical characters, the different forms of chronic gastritis have a constant tendency to become confounded.

All this being laid down, let us direct our attention to some of the symptoms which accompany chronic inflammation of the stomach, and which indicate its existence with more or less certainty.

The tongue, in this affection, is far from presenting always the same appearance. First, there is a certain number of cases in which it does not at all deviate from its normal state; and, what is remarkable, this happens precisely in those cases where the stomach has become the seat of the most serious organic alterations.

It is principally, in fact, in the cases of cancerous degeneration of the stomach, that we have had an opportunity of observing this continuance of the tongue in its normal state; it is often, in such cases, remarkably pale.

With the exception of this case, it very seldom happens that in chronic gastritis the tongue is not more or less changed.

It very seldom happens that it presents through its entire extent that bright redness with smooth appearance of its surface which we have above seen frequently coincide with acute gastritis. We have, however, observed some persons who, for several months in succession, presented such a state of the tongue; they had all the other signs characteristic of chronic gastritis. But this appearance of the tongue alone should not suffice to cause us to admit its existence: from time to time persons are met with who, without experiencing any disturbance in their digestive functions, have, like the preceding, a red and smooth tongue. The upper surface of this organ is at the same time acutely sensible. They at first experienced pain in the tongue; then the epithelium covering it became detached, and the tongue then assumed that red and smooth appearance, and retained it for a very long time. This is simply superficial glossitis, which may exist without any complication of gastritis. The acute sensibility now noticed does not ordinarily take place when the redness of the tongue is connected with irritation of the stomach.

It is very common to find in persons affected with chronic gastritis, the tongue covered with a thick coat, either white or yellow, sometimes confined to its centre, sometimes extending over all its surface. At times nothing else is observed but this coat, and then the appearance of the tongue is similar to that which it presents in cases where the affection of the stomach is no longer a gastritis, and yields to means which would have infallibly exasperated the latter disease if it had existed. But most frequently when there is really gastritis, the coat which covers the tongue is not uniform; it is as it were marked by a great number of red points which show what the state of the mucous membrane is beneath it, and which become more prominent and more numerous towards the apex of the organ.

There are other persons likewise labouring under chronic gastritis, in whom careless examination at first detects nothing unusual on the upper surface of the tongue. But, on viewing it more closely, we find that towards its apex it is roughened by a great number of small red granulations, which appear to be so many papillæ more developed and more injected than in their natural state. These granulations do not always remain in the same state: at times they are very prominent, very red, and very numerous: at other times they are less apparent, paler, and fewer in number. Their development is always in the direct ratio of the intensity of the gastric irritation. Among the persons who present this particular state of the tongue, some have a stomach habitually sick; others have rather what is called a delicate or irritable stomach; they are forced to confine themselves to a certain regimen; they cannot, without great inconvenience, allow themselves the least excess in eating or drinking. This state of the tongue appeared to us more common in the gastric irritations of young persons than in those of persons more advanced in life. It is often observed in young females with a pale complexion and a weak constitution, whose stomach is habitually deranged; its existence may prevent one from considering and treating as nervous the symptoms they present on the part of the digestive organs. We have known several families, all the children of which presented this unusual development of the papillæ towards the apex of the tongue; in all these there were at the same time other signs of gastric irritation. In one of these families the mother and her four daughters presented this particular appearance of the tongue, and all five had a very delicate stomach.

It is almost only in acute gastritis that the tongue becomes remarkably dry; in some cases, however, of chronic gastritis it no longer retains its natural moist state;

it is clammy, and even in the cases where it is moist during the day, it is not uncommon to find it dry on awaking; patients express this by saying that in the morning their tongue is like a file; sometimes this state is habitual to them, sometimes it appears only when their state of gastric irritation becomes exasperated.

There are times when the chronic gastritis becomes more acute: then the tongue assumes a redder tint, or else it is covered with a thick white coat studded with a great number of red points. Sometimes again, more particularly when the system is already very much debilitated by the slow progress of the chronic affection, we perceive a diphtherite supervene which attacks the tongue and all the inside of the mouth. Though, in the great majority of cases, this complication portends a rapidly fatal termination, we have, however, sometimes seen the tongue and mouth gradually throw off the coat with which they were covered, and the gastric irritation, becoming less acute, resume its original course.

The sympathetic connexions between the mouth and stomach occasionally manifest themselves by other phenomena. Thus, in a considerable number of persons who suffer habitually from the stomach, each exasperation of the gastric irritation is constantly indicated by an eruption of aphthæ. In others, the salivary glands become painful and swollen, and profuse salivation sets in. This symptom is seldom permanent, and most frequently it assumes an intermittent form, every time the gastric irritation becomes more intense.

The sensation of thirst and that of hunger present numerous modifications in chronic gastritis.

Thirst is often absent. In others it becomes severe only at intervals, when the inflammation of the stomach passes to a more acute state. Other individuals, on the contrary, are habitually distressed by thirst, which obliges them to drink frequently between meals. This habitual thirst is usually connected with a somewhat intense degree of gastric irritation. We know a lady, who is about forty-four years of age, who has been labouring under chronic irritation of the stomach for more than twenty years, and has not passed a single day since that time without being tormented by a degree of thirst, which proves the most painful part of her disease.

In some this sensation of thirst is so severe, that they every day swallow a prodigious quantity of drink. This great thirst brings with it a very abundant flow of urine, a secondary diabetes, which is cured by removing the morbid state of the stomach, which is the real cause of it.

The appetite remains good in several cases of chronic gastritis, and patients frequently have need of the utmost determination to resist the very keen desire which forces them to continue to eat when once they have commenced a meal. The desire, however, like many others, is very fallacious, and experience has proved how injurious it is to comply with it.

Other patients also, like the preceding, experience a sensation which they take to be hunger; according to the expression which many of them use, they *feel a craving*, they commence eating with real greediness; but scarcely have they taken the smallest portion of food, when they are obliged to stop, they become disgusted; several say that they feel their stomach so filled that, though *they still have a craving*, they can no longer swallow. Others fancy that the food which they intend should pass into their stomach stops in the gullet, and chokes them. Thus different sensations indicate that sort of struggle which is set up between the preservative instinct which forces the individual to repair his loss by the assimilation of new materials of nutrition, and the stomach which refuses to admit food which it is unable to digest. Under such circumstances, many patients seek after stimulating food and spices of all kinds; sometimes they are indulged with them, and it is supposed that it is still an instinct which it is useful to obey; but they always pay dearly for such efforts, unless the disease is on its decline.

In other cases of chronic gastritis, the necessity for reparation evinces itself by an appetite so very great that, if they are not immediately gratified, the patients actually faint away. This feeling may return several times a day, and a very small portion of food is in general sufficient to appease it. For it is not real hunger, and in the majority of cases this imperious necessity for taking aliment into the stomach is promptly changed into a disrelish for food.

There are persons labouring under chronic gastritis in whom the want of reparation is indicated by extraordinary sympathies. In some there is observed a headach, which ceases when a little food is taken into the stomach. Others are attacked with dyspnœa, or else they have a dry cough, which is appeased the moment they have eaten. We knew a person in whom such a cough returned in this way periodically some time before each of his meals.

Every time that chronic gastritis comes to be exasperated, and evinces a tendency to pass into the acute state, the appetite is completely lost, if it did exist; and if it were succeeded by one of the phenomena just mentioned, these phenomena also cease, and no other symptom is now observed, except total and absolute disrelish for all kinds of food.

Chronic inflammation of the stomach is not necessarily accompanied with pain in the region of the suffering organ. This pain may be even entirely absent in the most severe cases, in those wherein the parietes of the stomach are attacked with cancerous degeneration, with ulceration on its internal surface. We have seen several cases of this kind, in which the epigastrium had remained entirely free from pain ; we have seen other cases, on the contrary, in which we should certainly have found but very slight lesion, and still where the epigastrium was either habitually or at intervals the seat of very acute pain. Moreover the extreme acuteness of these pains appeared to us to be much more frequently the product of neuralgia of the stomach than of real gastritis.

The nature of the pain, connected with chronic gastritis, is far from being always the same. At times very acute, and appearing only at certain intervals, it manifests itself by a feeling of constriction towards the epigastrium, whence it has been designated by the name of *cramps of the stomach.* We have seen cases in which this particular pain appeared at intervals more or less remote in persons labouring under well-marked chronic gastritis. We have seen other cases where, in the absence of this pain, there was no sign of any affection of the stomach ; it might then be considered as purely nervous. Still we should add, that we have observed persons who, after having been for a long time subject to these cramps of the stomach, there being no complication of any other gastric symptom, presented at a later period all the symptoms of a chronic inflammation of the stomach. Is not this one of those cases in which a simple neuralgia is the first commencement of an inflammatory state ?

Other patients complain of nothing but a sensation of weight in the epigastrium, or else a sort of swelling, which comes on principally after they have eaten. Several complain of a kind of bar which extends transversely over the epigastrium and the two hypochondria ; some experience very troublesome pulsations towards the epigastrium.

The seat of pain is very variable ; sometimes it occupies all the region of the stomach, and the patients feel it as far as the level of the umbilicus ; sometimes it occupies a much more circumscribed point, either the parts around the pylorus, or the great cul-de-sac, or the cardia. In this latter case, the patients feel as it were a fixed stinging pain towards the xiphoid cartilage ; one of these patients told us one day that he constantly felt as it were a gimlet entering at the point. Others complain of suffering principally above the xiphoid cartilage, in the space occupied by the last piece of the sternum, and yet it is not there that the real seat of the disease lies. In such cases, is it over the nervous plexus which surrounds the lower extremity of the œsophagus that the suffering of the stomach is more particularly felt ? The pain may also extend all along the œsophagus, and its course is very clearly marked by the patients themselves; then it is a kind of burning heat which they experience all along this tube. Sometimes the pain is felt towards the middle of the back.

In one case, where the pain had been one of the predominant phenomena of the disease, we found near the pancreas a morbid change which might be considered as its principal cause. It was in a woman, sixty years of age, who entered the Pitié, complaining of a very acute pain towards the middle of the dorsal region, which did not allow her a moment's rest. This woman had all the symptoms of chronic gastritis. Some time after her admission into the hospital, another pain developed itself, the principal seat of which was towards the præcordial region, and radiating from thence to all the left side of the chest: percussion detected a dull sound in the region of the heart over a greater extent than ordinary, to as far as the lower part of the sternum. Auscultation detected nothing particular; the pulse which was frequent still retained its regularity; the breathing was not perceptibly embarrassed. About fifteen days passed on in this way, when the præcordial pain disappeared, and that of the back diminished, but then symptoms of another kind supervened; the patient began to sink rapidly; her tongue became dry; a creamy coat extended over the tongue and cheeks, and death soon terminated this long series of suffering. What we found at the post-mortem examination was as follows:—A pint of fluid like blood just drawn from a vein filled the cavity of the pericardium; thick false membranes placed one over the other covered all the internal surface of this fibro-serous sac. Thus this pain was explained, which, proceeding from the præcordial region, extended over the left side of the chest, with dulness of sound at the base of the sternum. The mucous membrane of the stomach was softened over the principal portion of its extent, and was very much injected in several points; thus the symptoms of gastritis were explained. But did this lesion of the stomach account for the dorsal pain, which had been so long the predominant symptom? it was at least doubtful, and this pain appeared to us rather to recognise for its cause the following alteration, which is very remarkable for its rare occurrence. In the place ordinarily occupied by the pancreas, there was found a tumour of a cancerous nature (a mixture of the scirrhous and encephaloid tissues), which posteriorly rested on the aorta and vertebral column. This tumour was as it were embraced by the duodenum, which circumscribed it within its three curves; within it we observed here and there some debris of the tissue of the pancreas. Another tumour of the same nature, about the size of a hen's egg, appeared between the liver and the diaphragm, a little to the right of the epigastrium. It adhered closely to the liver. No lesion was found in any other part. It is remarkable, no doubt, that in an individual labouring under gastritis the stomach did not undergo the cancerous degeneration at the time when the predisposition to this degeneration was demonstrated by the existence of the two tumours just described. It is also well to note that, in most of the cases in which the pancreas has been found cancerous, there were cancers at the same time in other organs; here they were not found in any organ. But let us return to our subject.

Whatever be the seat and nature of the epigastric pain, it varies in different individuals with respect to the circumstances which exasperate or reproduce it.

The process of digestion is with many persons the cause of the return or increase of the pain; still several persons say that they suffer whether they eat or not, and whatever be the nature of the food which they take; but these are rare cases, which appertain rather to other morbid states of the stomach, of which we shall speak presently, than to real gastritis.

In a considerable number of persons, the uneasiness occasioned in the stomach by the process of digestion does not occur until a considerable time after food has been taken. Thus we meet persons who suffer in the stomach principally in the morning or on awaking, and in whom the suffering is so much the greater, according as they have been less reserved in their diet on the preceding day.

It would be interesting to know precisely the nature of the gases, which are disengaged in such great quantity from the stomach in a great number of cases of chronic gastritis. We know that sometimes they are devoid of smell or taste, and are independent of the process of digestion, and that sometimes they accompany this process more particularly; they then acquire the scent of sulphuretted hydrogen, and their taste is often extremely acrid, so as to occasion considerable pain in the parts through which they pass.

Chronic gastritis, in its numerous shades, is seldom accompanied by vomiting; the latter symptom occurs principally in two cases; either, when under the influence of causes appreciable or not, the chronic inflammation of the stomach passes into a more acute form, or else when the alteration, of which the stomach is the seat, opposes an obstacle to the free passage of the food, either at its entrance into the stomach or when it is making its exit from it. It is then principally in cases of a cancerous affection of the cardia or pylorus that vomiting takes place. In the former case this vomiting occurs immediately after food has been taken; in the second case it does not come on till a much later period. Some patients vomit every day, four or five hours only after they have eaten; in other cases the vomiting does not come on till after much longer intervals, every five, six, or eight days. The persons in this case often vomit at once an enormous quantity of matter; in the preceding article we have explained how in such cases the stomach acquires a prodigious size, and becomes like a large bag for carrying food, as long as it can be distended; we can then frequently trace this bag, both with the eye and by our touch, through the attenuated abdominal parietes, and more frequently still we can ascertain the dilatation of the stomach by the gurgling noise readily produced in the epigastrium, by shaking the patient's trunk. The same takes place in patients who themselves can produce this gurgling by forcibly contracting the abdominal parietes, so that these parietes alternately are removed from and brought in contact with the viscera which they cover.

With respect to those cancers of the stomach which affect the body of this viscus, they may exist in all possible degrees without vomiting being ever produced. Then we have often found on one or other surface of the stomach either extensive ulcerations surrounded by a scirrhous tissue or large cancerous vegetations, in persons who, during the course of their long illness, had never had either nausea or vomiting.

The matters vomited by persons labouring under chronic gastritis are more particularly either food or mucus secreted by the stomach itself, or bile, or blood with its ordinary qualities, or a black matter, which seems to be nothing but blood changed by its having been in the stomach for some time. (See the preceding article on this point.)

The vomiting of mucus may be merely accidental, and connected with a temporary increase of the gastric irritation. At other times it is habitual; thus several patients throw up every day, either in the morning only, or several times in the course of the day, a whitish viscid liquid, very much resembling albumen which has not been subjected to boiling. This sort of vomiting is not often accompanied by any other, and it by no means always occasions for instance that of the food.

Chronic gastritis is scarcely ever accompanied by bilious vomiting, except when it becomes more acute. Sometimes this sort of vomiting precedes the other symptoms; it occurs from time to time, leaves no trace after it, and it is only at a later period, and often without its reappearing, that all the signs of chronic gastritis supervene. Thus we have seen a person who, from his eighteenth to his thirty-seventh year, scarcely passed a summer without being attacked with copious vomiting of bile, and alvine evacuations of the same nature. He for some days felt a sort of general indisposition and fatigue, he lost appetite, the epigastrium became a little sensible to the touch, and bilious evacuations commenced ; they continued for two or three days, and then his health was restored. In all the other seasons of the year this person digested his food well, and suffered nothing from his stomach ; but such did not continue to be the case ; towards the thirty-sixth year of his age his stomach began to be permanently affected, and by degrees he presented all the symptoms of scirrhous pylorus.

It is generally supposed that vomiting of black matter like chocolate, coffee grounds, or soot, is one of the least equivocal signs of cancerous degeneration of the stomach. In the preceding article we have cited cases wherein this vomiting appeared without there being cancerous ulceration of this organ, nor even a trace of cancer in its parietes. But in the cases which we have cited, the stomach, without being cancerous, presented alterations which characterise other forms of chronic gastritis. Here now are other cases in which the stomach was not the seat of any appreciable lesion, though during life profuse black vomiting had occurred. In one of these cases the cancerous masses had attacked the liver ; in the others the principal disease was chronic peritonitis.

1st Case. A man, thirty-five years of age, entered the Maison Royale de Santé with dropsy (serum in the peritoneum ; infiltration of the scrotum and lower extremities ; no trace of œdema in the upper extremities, nor in the face). After the scrotum was scarified, the skin of the part became red, and phlegmonous erysipelas attacked the thighs, the iliac fossæ, and ascended as far as the flanks. Whilst this erysipelas was becoming developed, the patient vomited a great quantity of black matter like soot mixed up with water. He died three days after this vomiting appeared.

We found the stomach free from all appreciable lesion. It was pale on its internal surface, and its different membranes were of their natural thickness and consistence ; the remainder of the digestive tube was pale and healthy like the stomach. The liver, which was of a moderate size, presented on its interior twelve white hard masses, possessing all the characters of encephaloid matter in the state of crudity. The spleen was large and very firm. The other organs presented nothing remarkable. The cellular tissue of the scrotum, thighs, and hips were infiltrated with sero-purulent liquid.

2nd Case. A man fifty-three years of age, during his stay in the Maison Royale de Santé, presented the different symptoms of chronic peritonitis ; still further, he had some cough, and in the course of his life had had some attacks of hemoptysis. He kept to milk diet. All at once this man was seized with vomiting of matter resembling coffee grounds ; on the two following days he passed similar matter by stool. Rapid exhaustion followed these evacuations, and he died.

On opening the body we found the intestines united into one mass by false membranes which were studded with myriads of tubercles. The internal surface of the stomach presented a very slight injection in some points ; the gastric mucous membrane was everywhere of its normal thickness and consistence, and no alteration was observable in its subjacent tissues. The small intestine was pale and healthy. Such was not the case with the large intestine ; it was filled throughout with a black matter similar to coffee grounds mixed with another substance of a yellowish grey colour, which crumbled under the finger, and was fatty to the touch ; it resembled clay ; the black substance was more abundant than the other ; the intestine was distended by it. After the latter had been well washed, its inner surface was found to be perfectly white, and its different coats healthy. Nothing remarkable in the liver or in the bile contained in the gall-bladder. The spleen was small and dense. The upper lobe of each lung contained tubercles ; the greater quantity was found in the left lung. The heart, which was remarkably pale, without its tissue being more friable than usual, contained a small quantity of blood in its cavities.

3rd Case. A man, sixty years of age, entered the Maison Royale de Santé with the signs of chronic peritonitis. On the right of the epigastrium the abdominal parietes formed a striking prominence, such as would result from the presence of a tumour. October 2, this person was attacked with diarrhœa; he then vomited a great quantity of greenish bile several times; he continued to vomit bile on the two following days. On the 5th the nature of the vomiting was changed: it consisted of black matter resembling coffee-grounds; from the moment this new vomiting appeared, the features became rapidly changed; a state of great exhaustion ensued, like that which accompanies profuse hemorrhage, and death took place on the 6th of October, at four in the morning.

At the post-mortem examination we found a sero-purulent effusion in the peritoneum, and false membranes which united the intestines together in every part. Small miliary tubercles were scattered over the gastro-colic epiploon, a profuse collection of pus was found in front of the stomach; a cavity was formed bounded entirely by the abdominal parietes, posteriorly by the stomach, on the left by the spleen, and on the right by the liver, which seemed to have been flattened by this collection. Anteriorly and below the edge of the liver, towards the point occupied by the gall-bladder, another pouch was found, the parietes of which consisted of false membranes easily torn by the finger; this pouch also contained some pus. It was this pouch which during life formed the prominence on the abdominal parietes towards the right hypochondrium. False membranes placed one over the other thickened the parietes of the gall-bladder to an extraordinary degree.

The stomach was empty, its internal surface was white, and its different membranes in the natural state. The duodenum, jejunum, ileum, and all the large intestines, were filled with a black matter resembling coffee-grounds. Beneath this matter no other morbid charge was found except a number of black points on the villi of the duodenum and of the commencement of the jejunum. The liver was remarkably dense; it presented a great number of irregular patches of a whitish grey colour, consisting of the yellow substance, divested of colour, the convolutions of which were, as it were, heaped on one another, the red substance having disappeared between them. The spleen, which was pale, was of the natural size and consistence. The summit of both lungs presented some tubercles scattered through a hard and black tissue. The heart, which was pale, contained a small quantity of liquid blood, as did also the vessels.

These three cases prove clearly that the black vomiting, which is often one of the effects of cancerous degeneration of the stomach, may also result solely from an exhalation of the gastric mucous membrane, an exhalation not connected with any lesion of the stomach appreciable on the dead body. This exhalation may also take place at the same time in the intestine, in which again no lesion is to be found. Only in the case just cited one might be struck with the very pale appearance of all the internal surface of the digestive tube, and with the sudden sinking of the patient's strength, which took place from the first appearance of the evacuations. These are so many phenomena which usually accompany every profuse hemorrhage.

One of the symptoms most usually accompanying chronic gastritis, when it is free from any complication with the rest of the intestine, is obstinate constipation. It is increased or diminished according as the gastric irritation is more or less severe. In such cases the patients too often attribute to the constipation their gastric symptoms, and the purgatives to which they have recourse to overcome it seldom fail to aggravate the complaint; and always after the stools which they thus provoke artificially, they still remain more constipated than before. The only means of subduing this constipation, is to diminish the gastric irritation.

In chronic gastritis the functional disturbances are not confined merely to the digestive organs. The irritated stomach re-acts on the different organic systems, and from thence there are produced symptoms as different as the individual predispositions themselves are.

On the part of the nervous system functional disturbances the most varied may be observed. For instance, it is very frequent to see in persons labouring under chronic gastritis, each digestion accompanied by extreme debility, a general feeling of fatigue, wandering pains in the limbs, a sort of distress which disappears according as the digestion approaches its termination. It may happen that whilst these general symptoms are observed, the suffering on the part of the stomach itself may be very slight; and observe that it is by these same general symptoms that acute inflammation also of the stomach often commences, and that in this case also it happens more than once that the general symptoms are much more marked than the local. With repect to this circumstance, see the preceding part of the work.

Independently of this effect which is observed in a great number of cases, there are others more uncommon, which depend on the particular state in which the gastric affection may find the nervous system in each patient. Thus in some persons headachs are observed which are evidently dependent on the gastric irritation with which they are tormented.

We know a lady who, labouring under chronic gastritis for several years back, is seized with a well-marked numbness of the upper extremity of the right side every time the gastritis becomes worse. We know another who, having had facial neuralgia in her youth, has ever since found this neuralgia to return every time that her stomach, which is habitually delicate, has become the seat of increased irritation.

We have been consulted by a young man affected like the preceding persons with chronic gastritis, whose entire skin becomes from time to time so acutely sensible, that he cannot bear the least contact without pain. He has remarked that this extreme cutaneous sensibility was constantly preceded by an increased severity of the gastric symptoms, and that it invariably diminished with the latter.

We once attended a patient thirty-six years of age, who enjoyed all the comforts of life, who was haunted by the idea of suicide during all the time he had gastritis; he had been labouring under it for three or four months when he applied to us. By means of suitable treatment we removed the gastric inflammation, and from the moment his digestion was restored he gave up all idea of suicide.

We know that many cases of hypochondriasis may be referred primarily to a morbid state of the stomach. How many persons have we not seen who, without becoming hypochondrical, were seized with profound melancholy, for which they could not account, every time they complained of their stomach!

The circulation is but little changed by chronic gastritis. Excepting the case where this affection passes for a time into the acute state, the pulse remains free from frequency, and the skin continues cool. In some persons, however, the process of digestion is accompanied by a slight febrile paroxysm.

In consequence of a peculiar disposition, several persons labouring under chronic gastritis are annoyed with palpitations evidently connected with this gastritis, and which are observed to increase and diminish with it. These palpitations, which are all sympathetic, are chiefly observed in persons disposed to them by the size of their heart, and the gastric irritation then becomes the occasional cause of the more rapid development of the aneurism, the rudiment of which these persons carry about them. Cure their gastritis and you will often see the affection of the heart again become stationary.

The respiratory apparatus is occasionally affected by the irritation of which the stomach is the seat. Thus, in more than one case of chronic gastritis, one of the most prominent symptoms accompanying the process of digestion, is a very painful dyspnœa, the primary cause of which many patients of themselves refer to the stomach. Is it by the influence of the pneumo-gastric nerve that the disturbance of the respiration can be accounted for in such cases?

At other times it is not this dyspnœa that is observed, but every exasperation of the gastritis is accompanied by a dry cough, which is purely sympathetic, and which has been for a long time designated by the name of gastric cough. Its existence does not appear to us to be at all a matter of doubt; but still we must add, that this cough more frequently appears in persons who labour under some affection of the lungs, as we a little while ago remarked, that palpitations produced by chronic gastritis were observed principally in persons who labour under an affection of the heart. Interrogate phthisical patients on this matter: the greater part of them will tell you that every time they have eaten, their cough becomes more severe, and this is chiefly marked in them, if their stomach begins to be irritated.

The different organs of secretion do not remain exempt from the disturbance occasioned in the system by gastric irritation. The secretions of the skin are those most frequently modified; they are diminished or suppressed, and thence results that peculiar dryness of this organ observable in patients affected with chronic gastritis. This dryness is chiefly remarkable in the palms of the hands.

Is there any connexion between this almost constant modification of the cutaneous secretions and those different eruptions so often observable on the skin during the course of some cases of gastritis? We were once consulted by a young man accustomed to gastric affections, whose skin was covered with patches of urticaria every time the irritation of the stomach became increased. We have seen another case still more extraordinary: a young man had been labouring for several months under all the symptoms of gastric irritation; at one time he took four drachms of magnesia; he instantly felt a most painful weight in the epigastrium; he had nausea, which was followed by vomiting, and presently his entire skin became covered with large patches of urticaria. This eruption continued for thirty hours and disappeared. There was here a very striking coincidence between the accidental exasperation of the gastric irritation, and the appearance of the cutaneous eruption. It is well known that in many cases herpetic affections never fail to become more severe, every time the stomach becomes irritated. Thence the indispensable necessity of the mildest regimen in affections of this kind.

When gastritis gives rise to vomiting essentially composed of bile, it must be admitted that the secretion of the liver itself is modified. For in the ordinary state, the bile enters the duodenum only in small quantities at a time, as may be observed in living animals. An increased quantity of bile therefore must flow into the intestine all at once, and following a course contrary to its natural course, it rises towards the stomach, and passes the duodenum; to be sure it might also so happen that it was only by little and little that the bile entered the stomach, and that this organ did not throw it up until it was collected there in sufficient quantity.

The urinary secretion is modified in a thousand ways in persons labouring under chronic gastritis, but without this modification being more peculiar to gastritis than to any other disease; we shall not therefore dwell on it here, and we shall merely cite two rather remarkable cases which we have met, which prove how great the influence of the diseased stomach may be on the functions of the kidneys.

A man, about forty years of age, presented, for a long time back, the symptoms of an habitual gastric irritation. At three different times he was attacked, without any known cause, with an acute pain in the epigastrium, followed by copious vomiting of bile. Every time these symptoms returned he passed several gravel stones when voiding his urine, which consisted of uric acid. At no other period of his life did he observe his urine to contain any.

A young lady consulted us for diabetes mellitus, to which she had been subject for the last year. We put her under an exclusively animal diet, which she was not able to continue long. We soon discovered that in this individual the diabetes was complicated with chronic gastritis, which seemed to have been completely neglected in the treatment hitherto adopted. We ascertained from the patient, that she began to complain of her stomach and of bad digestion some months before the first appearance of her diabetes. We thought the best treatment was to endeavour to remove the gastric irritation, and we recollected some cases detailed by Dr. Dézeimeris, in which there was, as in our patient, a co-existence of chronic gastritis and diabetes, and in which the latter disease was removed by removing the inflammation of the stomach. Some leeches were first applied to the epigastrium; this region was then rubbed with tartar emetic ointment, at the same time we confined the patient to a very mild diet; we tried milk, which till then had been prohibited, and as she digested it very well, it soon constituted her only diet. This treatment was continued for three months; at the end of this time there was no longer any trace of gastric irritation, and, what is very remarkable, the urine returned to its natural state. Thus, by curing the gastritis, we removed the diabetes, so that it was reasonable to suppose that the latter of these affections was dependent on the former.

ARTICLE III.

Treatment of Chronic Gastritis.

A DISEASE such as chronic gastritis, which presents such varied degrees of intensity, which corresponds with lesions so varied, and which is indicated by symptoms oftentimes so different, cannot require in all cases the same treatment. There is a shade of chronic gastritis, in which the treatment must be as rigourously antiphlogistic as in acute gastritis; there is another shade of this affection in which the treatment should be entirely different, and where it is a more or less stimulant plan of treatment that has any chance of success. This occurs towards the termination of a certain number of cases of chronic gastritis, when the inflammation was previously combated by suitable means, and when it is on the point of being removed. In some time it will no longer exist, and still the functions of the stomach will be far from having yet returned to the normal state. Then it frequently happens that we cannot restore them but by having recourse to a new mode of treatment, and principally by changing the quality of the food. Hitherto the mildest diet, and medicines of a corresponding nature, had been alone prescribed, and the disease had not ceased to improve under their influence; now it remains stationary, and presently it will present itself under another aspect: the mildest drinks, such as gum-water, which hitherto were the only drinks that could be borne, produce, when taken, a sensation of weight in the epigastrium; if persevered in, they will at length be discharged by vomiting. The same may be said of the fæculas and other mild aliment which had hitherto constituted the basis of the food. Then what are we to do? Shall we admit that the gastric irritation has again assumed increased activity, and shall we still retain the severity of the regimen? Shall we subject the patient to strict diet? In acting thus we might aggravate the symptoms to an alarming extent: total abstinence, at a moment when the exhausted system feels acutely the want of reparation, and where the improvement in the state of the stomach allows us to satisfy it, might occasion towards this latter organ a secondary irritation, which might manifest itself by pain in the epigastrium, dryness and redness of the tongue, nausea and vomiting, and acceleration of the pulse. For these effects there might, in a little time, be no longer a remedy, and the sudden return of the gastritis to the acute state might be speedily followed by death. This is what has unfortunately been observed more than once in cases where persons have taken for signs of increased irritation phenomena which resulted from an entirely different cause. Then the stomach no longer bears gum-water ; it bears, on the contrary, some aromatic or bitter preparations, and a little wine of good quality agrees perfectly well with it. Fæcula prepared with milk, or with chicken broth, cannot be digested, whilst strong broth will succeed very well. The gastric mucous membrane is then in the same case as the mucous membrane of the eye, which, towards the decline of some cases of ophthalmia, becomes redder and more engorged under the influence of mild collyria, and which soon returns to its normal state, if bathed with brandy, or touched with nitrate of silver. It is because the accumulation of blood in a part does not necessarily imply that this part is irritated, and because the living tissues, in order that they may be able to disengage themselves from the disease which has attacked them, require a certain degree of stimulation beyond and short of which these tissues can no longer return to their normal state.

Long experience alone can teach us to modify, in each particular case, the general rules of hygiene which should be followed by persons labouring under chronic gastritis. We shall make but one remark on this subject ; it regards the exercise which is taken by these patients. Very often it is not proportioned to their strength, and, by their fatiguing themselves, they are prevented from digesting. Inasmuch as considerable exercise is useful, when the patients take sufficient nourishment, in the same degree has it appeared to us injurious in the case of those who are kept on strict diet. In such cases the digestion has all at once become easier merely by obliging the patient not to walk after eating. We have seen persons who did not digest well except they took their meals in bed, and remained there all the time the process of chymification was going on. We have attended a lady who could not re-establish the functions of her stomach, which had been for a long time the seat of irritation, except by eating in a bath. At first she breakfasted and dined in this way ; she then took but one meal so ; after strictly adhering to this practice for about six weeks she was completely cured.

CHAPTER III.

OBSERVATIONS ON SOME AFFECTIONS OF THE STOMACH, WHICH DO NOT CONSIST IN AN INFLAMMATORY STATE OF THIS ORGAN.

The different alterations of the stomach considered in the two preceding chapters, possess this common, and at the same time very important, character, namely, that the antiphlogistic treatment is that which may be employed with most advantage against them. When this treatment is no longer useful, it is because the nature of the alterations, against which it was employed, has been changed. We pointed out this at the end of the second chapter.

We have, with M. Broussais, employed the term *gastrite* to express those numerous alterations which all recognise irritation as their common link, and which all require a treatment exclusively emollient.

Still every affection of the stomach is not gastritis. In many cases its functions may be disturbed under the influence of causes all differing from those which ordinarily produce inflammation, and this disturbance of function is removed only by a treatment which must necessarily exasperate it, if it depended on this inflammatory state of the stomach. *Post-mortem* examination again steps in here to strengthen those proofs of its authority, by presenting to us cases in which the stomach exhibited no trace of inflammation, though during life it had been the seat of functional disturbances more or less serious.

First, it is generally admitted that several diseases of the nervous centres may very much disturb the functions of the stomach, occasion profuse and prolonged vomiting, without our being able to detect in the stomach itself any appreciable lesion whatever. Numerous instances of this are to be found in the first part of this work*.

CASE 1.—*Dyspepsia of several months standing; progressive wasting—No appreciable alteration in the stomach, or in any other organ.*

A woman, thirty-eight years of age, entered the Pitié in the month of April, 1831. She stated that since the last seven or eight months she entirely lost her appetite; every time she took food she felt an insupportable weight in the epigastrium, and occasionally rather an acute pain. From time to time she vomited some whitish mucus. Strong pressure on the epigastrium produced no painful sensation in this region. The remainder of the abdomen was soft and free from pain; the patient was habitually constipated; tongue natural; no disturbance of any other organ; the patient was very much emaciated and very feeble. She mentioned that she had begun to lose her appetite and her powers of digestion after having been subjected to severe mental distress.

We considered this woman as labouring under chronic gastritis, and in consequence of the perfectly natural appearance of the tongue we apprehended the existence of a cancerous degeneration of the submucous cellular tissues. We prescribed milk diet, and established a seton over the epigastrium. The woman wasted away gradually, and eventually died without presenting any new symptoms. Towards the latter period of her life she even refused to take milk, and admitted nothing else into her stomach except a few spoonsful of gum-water.

Post mortem. The brain, lungs, heart, and abdominal viscera were all found in a perfectly healthy state, as also the trisplanchnic and pneumo-gastric nerves.

Thus in this case anatomy was entirely unable to reveal to us the cause of the symptoms and of death. This stomach, so very much disturbed in its functions, was perfectly healthy in its texture.

It was not therefore of chronic gastritis that this patient died; for gastritis leaves behind it traces of its existence. Was there in this case neurosis of the stomach, or atony of this organ? Who could prove it? We know so little by what force chymifaction is accomplished, that we cannot appreciate all the causes which prevent its going on.

On the other hand, the sympathetic connexions between the stomach and the other organs are so numerous, that the disturbance of one of these organs must necessarily modify the functions of the stomach, without this modification being necessarily an inflammation, or even simple irritation. May it not be in this respect the same with the gastric mucous membrane as with the skin? And in the course of most chronic diseases the cutaneous covering is often found considerably modified in its several secretions, without its being in the slightest degree inflamed or irritated; why, under such circumstances, might not the functions of the mucous membrane of the stomach be also more or less seriously altered? In a word, by virtue of this wonderful law of synergy, of which the animal economy presents us with such continual examples, it seems that the functions of the stomach, in which the act of assimilation commences, must tend to become suspended, for this sole reason, that other organs of nutritive life (small intestine, lungs, liver, etc.) have themselves ceased to fulfil their functions. Of what use in fact would it be that chyme should be formed, if the further changes of the aliment could not be produced, if it could become neither chyle, nor blood, nor an integral part of the tissues of the individual? Professor Berard, of Montpellier, seems to have expressed this idea with as much strength as accuracy, when he said that the system digested by means of the stomach.

---

* Some cases are here detailed by our author in which profuse vomiting existed as the predominant symptom, without any lesion being found in the stomach to account for it. These cases we have omitted.—TRANS.

Besides those cases in which the functional disturbances of the stomach cannot be explained by any change in the structure of this organ, there are others wherein, to account for these functional disturbances, some lesions of structure are found; but nothing proves that these lesions are of an inflammatory nature.

Though it has been already laid down that, in the stomach as in many other organs, softening is a result of inflammation, we think it impossible to state positively that every softening is really produced by an inflammatory process. It seems to us that this softening which exists in the gastric mucous membrane in several individuals exhausted by chronic diseases, is but a further degree of diminution of consistence, which the muscular fibre, as also the blood itself taken from a vein, present in the same individuals[*]. Certainly it is proceeding on a fair and rational analogy, and not transgressing the laws of a sound philosophy, to admit that in cases where the principal agents of life, the blood and nervous system, no longer nourish and excite the organs sufficiently, all the vital force of aggregation, by which the different molecules of the living tissues are held together, ceases to possess its natural and physiological intensity; thence the diminished cohesion of these tissues, and their greater or less softening, from the degree where, as is commonly said, *there is flaccidity of the flesh*, to that where the solid, losing the characters of organisation, manifests a tendency to return to the liquid state. Thus, as we have already mentioned elsewhere, the transparent cornea becomes softened and is perforated in animals who are put on a regimen not sufficiently nutritive. We have sometimes observed a similar phenomenon in adults, and above all in children who have come to the last stage of marasmus; and in whom at the same time scorbutic spots appear in different parts of the body. In these same children we also frequently meet a very remarkable softening of the white central parts of the brain (corpus callosum, septum lucidum, and fornix), without this softening giving rise, during life, to any symptom of cerebral irritation; would it not be reasonable to place this also in the class of softenings from defect of nutrition or from diminution of vitality? Who would venture to affirm that all softenings of the heart are the result of inflammation or even of simple irritation; that is, according to M. Roche's definition, of an increase in the organic action of the heart? The same may be said of certain softenings of the liver and spleen; of which we shall speak in another part of this work. Again, is the remarkable softening of the bones in ricketty patients an inflammation or an irritation[†]?

In other persons the stomach is not found softened, properly speaking; but its coats are very much attenuated; the muscular membrane is reduced to a few pale and thinly scattered fibres; and oftentimes over a greater or less portion of it. The parietes of the stomach consist merely of the peritoneal coat, in apposition with which is found a very thin cellular layer in place of the mucous coat. Like the instances of softening mentioned a little while ago, this attenuation, whether of the mucous membrane alone, or of all the coats at once, is observed only in persons who died in a state of marasmus, worn out by some chronic disease. Only once we observed it in a young girl who was not at all emaciated, and who entered the hospital with the symptoms of acute meningitis, of which she died. But in this case, we do not know whether, before the appearance of the cerebral affection, signs of gastric disease did not exist for a greater or less time.

---

[*] This is not all, and since the recent researches of Dr. Carswell, we can no longer refuse to admit as proved, what I had already considered as possible in my Elements of Pathological Anatomy; namely, that a great many cases of softening of the stomach do not take place till after death, being produced by causes which do not act on the gastric mucous membrane till after life has ceased.

[†] Regarding the nature and causes of softening of the different organs, see our Elements of Pathological Anatomy.

It may be readily conceived that, if, in a certain number of cases, this attenuation of the stomach comes on like that of the muscles at an advanced period of several chronic diseases, there are other cases wherein this same attenuation is the primary disease.

Should some persons be disposed to consider the attenuation, and real atrophy of the gastric parietes now under consideration as one of the numerous results of chronic inflammation, we would ask them whether they also think that the very great attenuation of the cranial bones often observed in old persons should be attributed to an inflammatory process?

We have been endeavouring to establish by proofs derived from anatomy, that the stomach may present a great number of disturbances in its functions, which do not depend on an inflammatory state of this organ. Let us not then be astonished, if, in a considerable number of patients, we see symptoms more or less similar to those which characterise chronic gastritis, become permanent and even aggravated by the continuance of a purely antiphlogistic treatment, and yield on the contrary to medicines of another description. It is because those symptoms were not produced by gastritis, but by other morbid states of the stomach, the nature of which we cannot always determine, but which experience has taught us to combat by certain therapeutic means.

Thus, this particular affection of the stomach, designated gastric disturbance (embarras gastrique), is certainly not gastritis. What its real nature is we know not; but what is beyond all doubt is, that this affection, when it really exists, resists blood-letting, and yields to stimulating cathartics.

We are not now taking into account the cases in which, whether in hospital, or in private practice, we have seen the health re-established after evacuations excited both upwards and downwards in persons in whom derangement was indicated by the following signs: for eight or fifteen days to a month they had no appetite; there was an habitual bad taste in the mouth; the tongue which was broad and pale at the apex and edges, was covered with a whitish or yellowish coat, *without this coat presenting any red points;* the stools were irregular, sometimes few and of great consistence, sometimes more frequent and soft; oftentimes a sense of tightness or of weight was felt in the epigastrium, and in some there was nausea. Further, there was general illness more or less marked, a feeling of fatigue, the face was yellow, and *drawn;* the eyes sunk; the head was often painful. We have often seen this group of symptoms resist the application of leeches, or mere attention to diet, or the use of diluent drinks, and then be instantly removed by a vomit or purgative. Are there in such cases *saburræ* in the alimentary canal? Is there a vitiated modification of the secretion of the gastro-intestinal mucus, whether in respect to its quantity, or its quality? Are the unknown powers, whose concurrence is necessary for the performance of digestion, altered? And do emetics and purgatives restore these powers by exciting the intestinal tube and its appendages? Do they produce a beneficial change in the secretion of the liver and pancreas? We know not; but the good effects of such treatment in the cases now alluded to, and the inefficacy of antiphlogistics in these same cases, are beyond all manner of doubt. (See the preceding Part.)

Before we pass to another series of facts, we shall mention a case in which a very intense headach connected with symptoms of gastric disturbance, after having been ineffectually treated by bleeding, disappeared after spontaneous evacuations up and down.

Case 2.—*Signs of gastric and intestinal disturbance—Inefficacy of blood-letting—Recovery after spontaneous bilious discharges up and down.*

A man, about twenty-two years of age, had been for about three weeks affected with a very painful frontal headach, and very frequent attacks of dizziness, when he entered the Charité. Since that time he had complete loss of appetite, bitter taste in the mouth, and great constipation.

When we saw him, his countenance was expressive of fatigue; the tongue was of a uniform white colour, and exempt from all appearance of redness; the abdomen was in every part soft and free from pain; pulse a little frequent without the skin being hot. Since the preceding day he experienced attacks of dizziness sufficient to prevent him from standing up or walking; he compared his pain of head to the sensation produced on his forehead by violent blows of a hammer. Eight leeches were applied to each side of the neck, and two days after he was bled from the arm (the blood, which came from a large orifice, united into a large coagulum without being buffed). No improvement followed. During the three following days, pediluvia, lavements, and diluent ptisans were resorted to without any relief.

Seven days after his admission the state of the patient was still the same; twelve more leeches were applied to the neck without producing any change. On the eighth day, about a month after this person's health became deranged, he vomited spontaneously a great quantity of greenish bile, and in the course of the day he went several times to stool: the alvine evacuations consisted of a very yellow liquid substance, and were not attended with any pain; in the evening the headach and dizziness were sensibly diminished, and on the next day they were entirely gone. On the three following days profuse bilious diarrhœa took place, it then ceased spontaneously, as it had commenced. Thenceforward the tongue became clean, the bad taste in the mouth disappeared, the appetite returned, and the patient soon left the hospital.

In this case may we not reasonably ask ourselves whether similar evacuations, artificially excited, would not have hastened the return of health? There is another morbid state of the stomach which does not manifest itself by the same symptoms as the preceding, which, like it, becomes aggravated by the antiphlogistic treatment, properly so called, and which, yielding to a decidedly tonic treatment, may be considered as an asthenic state of this organ.

This asthenic state may succeed chronic gastritis and be one of its terminations; this we have already proved. It may be primary without being connected with any other affection, and without any appreciable cause having given rise to it. Again, it is sometimes dependent on general debility of the entire system, and it succeeds causes which have weakened this latter organ more or less seriously: thus it is often observed to occur after excessive indulgence in venery and principally after masturbation.

The individuals in whom the derangement of the functions of the stomach is owing to an asthenic state of this organ cannot eat without experiencing a painful sensation, which is not identical in all. Some complain of a very troublesome weight in the epigastrium; others experience a sensation of tension or swelling in this same region, whilst others again complain principally of suffocation. As long as digestion is going on, they feel general debility, and several fall asleep. The nature of the food possesses considerable influence over the greater or less difficulty with which they digest; thus the digestion of pulse, white meats, and especially veal, occasions much more pain to the stomach than that of beef or mutton. They find themselves much better after drinking a little wine in water at their meals, than pure water; the latter often excites in them a sensation of weight which is removed by wine. Instead of plain water we may then add some

Seltzer water to the wine with great advantage. In some cases it becomes necessary to give some spoonsful of Spanish or quinquina wine at the end of each meal. The success of this regimen very well illustrates the nature of the gastric affection. In such cases the tongue is free from redness ; it is pale at its edges as also at its centre ; except at the time of digestion the epigastrium is free from pain ; sometimes, however, it contains an enormous quantity of gas by which it is distended, and which occasions temporary pains. The patients do not feel any thirst ; they are not hungry, properly speaking, and they are apprised of the necessity of taking food either by a sort of painful sensation in the epigastrium, or by a kind of general illness, of which their own experience points out the cause, or by a feeling of faintness. There usually exists obstinate constipation, and the stools are often devoid of colour. In some cases gentle purgatives are necessary to overcome this constipation ; their use, repeated with prudence, renders the stools regular, and gives them a better colour, and at the same time the stomach itself is improved ; in such cases we have employed with advantage the infusion of rhubarb ; we would carefully avoid the use of oily purgatives, as the stomach might not so easily bear them. Sometimes diarrhœa takes place by using pulse and underdone meat. Oftentimes it is not without much difficulty that the digestive powers return to their normal state. It is then no longer sufficient to assist the process of digestion by more stimulating food ; it is also necessary to administer certain medicines which act in the same way. The different preparations of quinquina seem to us in such cases peculiarly applicable ; they not only possess a beneficial influence on the stomach itself, but they also produce good effects on the remainder of the system, when this participates in the debility with which the stomach is affected. It sometimes happens that this latter organ has recovered the integrity of its functions, and yet, though digestion apparently goes on in a favourable manner, the patient does not recover flesh and strength. We were inclined to admit this in a young man whom we attended some time since. Being attacked at first with an affection which was considered as gastric irritation, he was for a long time subjected to a very spare regimen ; his diet consisted almost exclusively of milk. Still a period came when the milk could no longer be digested, and as its use was still continued for some time longer, the patient, who now took no aliment but such as was no longer assimilated, fell rapidly into the last stage of marasmus and debility. Still the tongue was natural, and there was no fever ; but the patient pined away so rapidly, that there was some apprehension that his dissolution was at hand ; in this state of things his diet was changed ; instead of milk and fæculas prepared with water, he took animal jellies, chicken, and soon after mutton ; all this food was digested perfectly well ; its employment was therefore continued, and the patient soon became able to take very substantial food, without the stomach suffering from it in the slightest degree. Still his general state was not improved ; the emaciation remained the same, and the debility did not diminish. We directed that the patient, who thought to increase his strength by taking carriage exercise and walking about his chamber, should discontinue to go out ; we also directed that he should remain as quiet as possible, that he should take all his meals in bed, and that he should remain without stirring from it, in order to digest ; for we deemed it necessary to spare his strength in every possible way. At the same time we directed him to take alternately an infusion of bark, Seguin wine, sulphate of quina both by the mouth and in the form of lavements, pills consisting of musk, extract of gentian, and subcarbonate of iron ; several times a-day stimulating frictions were employed on the extremities and trunk. We discovered no trace of lesion in any organ, and we began to think that the case was one of diminished power of nutrition. For nearly two months, during which time digestion continued perfectly good, the general state underwent no improvement ; towards the end of this time the limbs became infiltrated, and we detected commencing ascites ; we then began to despond, and dreaded that some latent alteration of the liver was the cause of this commencing dropsy. We persevered, however, in the employment of the tonic treatment, and at last the time came when the emaciation and debility, being now somewhat diminished, apprised us that the organs were beginning to assimilate the materials of nutrition sent to them by the stomach. As soon as ever the patient began to acquire a little more strength, we made him go out in a carriage, recommending him, at the same time, to avoid over exertion. His flesh and strength returned gradually, and he is now perfectly restored.

Does it not appear that, in this case, the essential lesion principally affected that power or force in virtue of which the living tissues assimilate the materials destined for their reparation? In vain had the stomach recovered the power of digesting the most nutritive materials: the system derived no benefit therefrom. It is to be observed that as long as the disease remained stationary, the urine presented a very copious deposit, consisting of uric acid and several calcareous salts. This deposit diminished from the moment that a slight alteration began to be observable. Was it the materials of nutrition furnished by the aliment, which, instead of being assimilated to the organs, were separated from the blood within the veins? we know that when there is an exuberance in the materials of nutrition, the urine becomes loaded with uric acid and phosphates. Was there not in this case a relative exuberance?

Here is another fact in which the disturbance of the functions of the stomach seems to have been occasioned by an asthenic state of this organ, and where this asthenic state was also dependent on the general state of the individual, and particularly on the state of innervation, on which the cause of the disease must have acted in the first instance.

CASE 3.—*Symptoms of chronic gastritis—No amendment from the employment of the antiphlogistic treatment and strict regimen—More substantial aliment—Cure.*

A young man, about twenty years of age, of a strong constitution, was in the enjoyment of good health, when he gave himself up to excessive masturbation. Some time after he had commenced to indulge in this destructive habit, his digestion, which till then had been good, became deranged; he felt, after eating, a disagreeable weight in the epigastrium; at the same time he wasted away, and a very distressing frontal headach made its appearance. These symptoms had existed for some months, when a physician was consulted; the patient, alarmed at the state of his health, left off the practice of masturbation, and, notwithstanding the functions of the stomach were not restored, the headach still continued. He was considered to labour under chronic gastritis, consequently the strictest regimen was prescribed, and leeches were several times applied to the epigastrium, all without any advantage; the headach did not diminish, nor the symptoms of gastric disturbance. We then changed the treatment; the patient began to take more substantial food; broths and animal food were ordered. A very little time after he had commenced this new regimen, the headach disappeared, the epigastric weight ceased to be any longer felt, and the patient was soon restored to perfect health*.

From this fact we think we may conclude that the gastric symptoms, which so often follow venereal excesses, and masturbation in particular, should not be considered as invariably and necessarily owing to gastric irritation. The case just cited induces us on the contrary to think that, far from the stomach being then irritated, it was really debilitated. It ceased to receive that portion of nervous influence necessary for the normal performance of its functions. It is quite certain that those venereal excesses have the effect of diminishing the energy of the nervous system, and of weakening or depriving the influence of this system on the different organs of animal and nutritive life. Why should not the digestive powers be also debilitated in this case, as well as the muscular strength, and the intellectual or sensorial faculties? We do not now mean to say that inflammation may not arise under such circumstances; we think on the contrary, that in consequence of the normal action of the nervous centres being modified, these different organs more readily and more easily become the seat of congestions, irritations, and of real inflammations; but on the one hand it must not be supposed, that all the symptoms which then come on can be occasioned only by them; and on the other hand it must not be forgotten, that even when they do exist, their treatment should be modified according to the particular conditions under which these inflammations have become developed.

---

* Facts more or less similar to this may be found in an excellent work on nervous gastralgia, by Dr. Barras.

In this case it is quite clear that it is not to the mere removal of the determining cause of the disease that the cure was owing; for the individual had for a long time discontinued the practice of masturbation, and still the disturbance of the digestive functions continued; we have no doubt but this disturbance was kept up by the debilitating treatment to which the patient was at first subjected.

Besides these cases in which the disturbance of the functions of the stomach seems to depend on an asthenic state of this organ, there are others wherein this latter cause can no longer be satisfactorily proved, and wherein the gastric symptoms are usually referred to a neurosis. Such is the following case:

A young lady, for whom we had been consulted during the winter of 1833, had been frequently during her life affected rather seriously with respect to her stomach. When we saw her she could not digest any food without feeling acute pains in the epigastrium. She soon gave up all sort of nourishment; she was unable to bear the lightest food; vomiting set in, and the patient became so debilitated and emaciated, that she was considered as dying. The tongue retained its natural appearance. Amidst this increasing debility, the patient was distressed by a very acute feeling of hunger, but in vain did we strive to satisfy it. The lightest food given to her was thrown up by vomiting; or, if it was retained, its digestion occasioned to the patient a state of indescribable suffering. M. Recamier, who was then consulted, thought that cold affusions might be beneficial, and he considered himself warranted in hoping, that, as soon as their employment was commenced, the digestive functions would be re-established, and that the patient might be able to bear some beef-tea, in which bread was steeped. The other physicians in attendance agreed to M. Recamier's proposition.

The patient being seated in an empty bath, water of the temperature of 22° R. was poured over her entire body, for about five minutes. She bore this first affusion very well; but when replaced in the bed she felt herself so very ill that she refused to take any species of food. On the following day, the affusion was recommenced, and this time the patient was actually forced to take a tolerably large slice of bread in some beef soup immediately after. The affusions were continued, and after each of them the patient was made to take a meal of a still more substantial quality; she very soon became able to digest a mutton chop; her strength was perfectly restored, and in this way an affection was removed which had appeared sufficiently alarming to induce us to announce to the family her approaching dissolution.

The region of the stomach sometimes becomes the seat of very acute pain, which, unaccompanied by any other alarming phenomenon, still seems to be connected with mere disturbance of the innervation. Thus we have had an opportunity of seeing a young girl extremely hysterical, who from time to time felt on a sudden, a little below the ensiform cartilage, a lacerating pain, which, when left to itself, generally lasted about 30 hours, and was relieved much sooner, when the patient was made to take a mixture, the active ingredients of which were æther and Rousseau's laudanum. This girl had a very good stomach, and her pain had scarcely disappeared, when she commenced to eat, as usual, without any thing unpleasant resulting from it.

We knew another woman about fifty years of age, in whom a lumbago, which habitually tormented her, was from time to time succeeded by an acute pain in the epigastrium; this continued for some days, it then disappeared spontaneously, and the loins again became the seat of pain.

A man consulted M. M. Chomel, Margolin, and myself, in the summer of 1833, for an extraordinary affection of which the following are the principal traits: this person, who was about sixty years of age, and of an exellent constitution, and had always led a sober, regular life, felt for the first time, about twelve years before, an acute lacerating pain in the epigastrium. The pain continued for several hours, and then ceased; he had never felt the least uneasiness with respect to the stomach; it had scarcely ceased, when he was able to digest as well as before. Since that time, this pain reappeared very frequently, at greater or less intervals. For some time it returned periodically, regularly assuming the tertian type; at another period, it presented itself every eight days; most frequently it observed no regularity in its returns. Its duration was very variable, sometimes an hour did not elapse between its appearance and its termination, sometimes it continued from twelve to thirty hours; once it lasted for upwards of one hundred hours, and this protracted attack was followed by jaundice; this was the only time that any disturbance appeared with respect to the biliary apparatus. This pain returned several times without any assignable cause; under other circumstances mental exertion seemed to exercise some influence over its reappearance. The patient vomited a certain quantity of clear mucus, the expulsion of which seemed to relieve him. We witnessed one of these attacks: the patient who was sitting up in his bed, the trunk being inclined forwards, expressed by loud cries the violent pain which he felt; this pain was seated immediately below the ensiform cartilage; it did not extend into the hypochondria, and inferiorly it did not reach as far as the umbilicus. It was not perceptibly increased by pressure. The countenance was pale, and the features became very much altered; the skin, which was cold, was covered with a clammy sweat; the pulse was very small, and not more than fifty. We gave him some acetate of morphia in the form of pills. This attack did not last long. The next morning the patient returned to his habitual state of health which was excellent; he had a good appetite, and was able to take his ordinary meals. It was evident that at the time of the attack, no organ was suffering in this case. Did the patient labour under neuralgia, either of the pneumo-gastric nerves, or of the solar plexus? Antispasmodics and narcotics seemed the most beneficial remedies, and it was these we prescribed to the patient. However, after the lapse of some months, and after a very severe attack, he discharged a calculus of moderate size by stool, from which time he became quite well.

There is another symptom, which in certain cases seems connected with mere nervous disturbance of the stomach; that is vomiting. We have already cited the remarkable case of a woman who had copious and long protracted vomiting, which was not accounted for by any appreciable disorder in the texture of the stomach. We have met other individuals, also, in whom the vomiting did not appear to be connected with a gastritis, or any other organic change of the stomach. We have seen, for instance, two women, aged from twenty-seven to thirty years, who for a considerable time laboured under palpitation of the heart, so severe that we apprehended the actual or approaching existence of an aneurism of that organ However, these palpitations ceased, and no disturbance any longer remained with respect to the circulating apparatus. But in both these individuals a little time after the action of the heart became regular, there came on vomiting which was soon repeated every time they tried to take any food. This vomiting continued, on one of them for the space of twenty days, in the other for nearly two months. The latter individual who was now reduced to the last stage of marasmus, appeared doomed to immediate dissolution. In both, however, these obstinate attacks of vomiting disappeared; solid substances, such as biscuits and the like, could be retained at a time when milk and chicken-broth were rejected; there was scarcely any interval between the time when the vomiting ceased, and that when their stomach was able to digest every thing with impunity. Thus their recovery was very rapid. During their illness the tongue had always remained natural, the epigastrium was free from pain, and the pulse was not frequent, the sensation of hunger had also been always retained. These certainly were not either the symptoms, course, nor mode of termination of a gastritis. In both these cases the subnitrate of bismuth appeared to us to be the medicine which contributed most to the cessation of the vomiting. Before it, opium had been employed without any good effect; at first, we sprinkled some acetate of morphine over the surface of a blister, we then gave it internally.

Independently of all these functional disturbances of the stomach which recognise so many different causes, and constitute so many different diseases, may this organ be affected also under the influence of an entirely specific cause, such as the venereal virus? Many cases present themselves wherein the symptoms of a gastric affection disappear under the influence of mercurial preparations? We propose these questions, without being able to solve them; we shall cite the two following cases, as bearing on these points; they seem particularly deserving of consideration.

CASE 4.—*Affection of the stomach, presenting all the symptoms of an organic lesion of this viscus, cured during the use of mercury.*

A FEMALE, twenty-nine years of age, whose father had died of an organic affection of the stomach, was married at the age of seventeen, and having had four children the first five years of her marriage, contracted about three years ago a gonorrhœa, which, after having been treated in its acute stage by demulcent drinks, baths, and soothing injections, was then stopped by the use of the astringent mixture known by the title of Choppart's mixture.

All discharge had ceased; the patient presented no general or local symptom indicative of the existence of the syphilitic virus; she assured us that she had never enjoyed such excellent heath; from time to time only some pimples appeared on the external labia, which disappeared very speedily under the use of baths and lotions of marsh-mallow water. Their frequent reappearance attracted my attention; when carefully examined, they seemed to present a dartrous appearance. The patient was put on the use of cooling drinks, and she took twenty Barrege baths; from that time the pimples did not reappear. For two years I continued to see this lady very frequently, and I know that her health was not for a moment impaired. At the end of these two years she became a prey to strong mental emotions; her life was crossed by annoyances of every kind. After this period she began to lose flesh; her complexion left her; her face assumed a leaden, livid appearance; most serious symptoms soon appeared with respect to the digestive organs; the appetite was lost; the food taken into the stomach occasioned a painful sensation, the seat of which the patient referred to the parts below the xiphoid cartilage; her food was sometimes vomited a few hours after having been taken. The epigastric region, when examined carefully, presented no appearance of tumour; it was sensible on pressure; violent eructations took place; the tongue was habitually whitish; stools natural; pulse very rarely frequent; skin dry; the menses returned every month as usual, but much less copiously. Every thing seemed to announce chronic gastritis in this patient. No symptom excited any suspicion that the liver was affected. Leeches were frequently applied over the epigastrium; they several times seemed to diminish the sensibility of the stomach.

This region was covered with emollient fomentations; tartar emetic plaster was tried, and blisters over the epigastrium; a cautery was applied to the arm; the application of ice to the epigastrium oftentimes suspended the vomiting; every species of opiate taken internally was soon vomited; the patient took nothing but some emollient drinks.

Notwithstanding all the efforts of art the disease made frightful progress. Five months after the appearance of the first symptoms daily vomitings took place; every species of food, whether solid or liquid, was in a great measure thrown up a little time after being taken; asses' milk was the only nutritive drink which could now be digested. We despaired of being able any longer to check the progress of this deplorable affection, when one day the patient complained of a distressing sense of heat in the throat, and of a difficulty in swallowing. The inspection of the parts soon detected on the posterior wall of the pharynx an ulcer of some breadth and of a rounded form, the appearance of which resembled that of syphilitic ulcers; there was no other venereal symptom present. We then asked ourselves whether the gastric affection which was hurrying the patient to the grave, might not be owing to a syphilitic taint. However hazardous this idea was, I still adhered to it, it being the only chance of recovery left to the patient, and because that under any circumstances the inconveniences arising from an antivenereal treatment, when conducted with judgment and discretion, could not be at all compared to the advantages which would result from it if judiciously employed. I consequently recommended the use of mercurial pills, each of which contained an eighth of a grain of deuto-chloride of mercury. I commenced with one pill which was taken at night; I increased them one by one, half in the morning and half at night, to the number of six only. I directed her to drink in the morning some barley-water containing milk, which she did not always vomit; this treatment was continued for forty days. At first no sensible improvement took place; it was certain, however, that the mercury taken into the stomach did not exasperate the former gastric symptoms, and that the state of the patient did not become worse. Towards the twenty-fifth day the vomiting became less frequent; the stomach seemed to digest somewhat better; strength seemed to return; the appearance of the countenance was not so leaden, From the thirtieth to the fortieth day the amendment could not be questioned; it was principally remarked in the infrequency of the vomiting. Encouraged by this success, I then combined the use of frictions; the lower extremities were rubbed at first every third day, and then every second day with a drachm of strong mercurial ointment. After the twelfth rubbing the state of the patient was entirely changed. The vomiting ceased; food could be taken into the stomach without causing pain; the epigastric region was soft and free from pain; the skin no longer retained its dryness; the natural appearance of the countenance returned, and the patient was soon perfectly restored to health.

Dr. Marc lately shewed us a case resembling the preceding in several particulars. An actor at one of the Parisian theatres, about 40 years of age, had had several times symptoms of venerea, gonorrhœa, chancres, tumefaction of the inguinal glands, swelling of different parts of the periosteum, pains in the bones, cutaneous pustules; he had never undergone any regular course of treatment. When he consulted M. Marc, he was in the most deplorable state of wasting; his countenance was very pale and expressive of suffering; hollow jaws, great emaciation; such exhaustion that he could scarcely walk about his room; he could no longer go down stairs; he had a small dry, frequent cough, with hoarseness, and slight pains in the larynx, respiration short and hurried, tongue a little red; loss of appetite, epigastric pain; frequent vomiting; stools natural, acute and deep-seated pain in the limbs; painful swelling towards the middle of the internal surface of the tibia, appearing to depend on a swelling of the periosteum.

From the group of symptoms just enumerated this individual appeared to labour under a twofold chronic inflammation of the stomach and bronchi, and one might very strongly suspect in him the existence of pulmonary tubercles and dread their development. However we examined his chest with M. Marc, and neither this mode of examination, nor percussion, revealed any organic lesion of the respiratory organs. The patient had been for a long time back subjected to all the varieties of the antiphlogistic treatment without any benefit. In this state of things, M. Marc asked himself whether this was not an instance of *venereal phthisis;* and after having considered the matter with us, he commenced the employment of mercurial frictions; these were continued for some time; sarsaparilla ptisan was given internally. By degrees his strength was restored, his countenance assumed a more natural aspect, and his flesh returned; the very troublesome symptoms arising from his lungs and stomach disappeared, and at the end of three months of a treatment in which mercury was pushed far enough to excite salivation, this gentleman's health was perfectly re-established.

Whatever may be the cause to which we may be disposed to refer the gastric symptoms presented by these two individuals, and also the very serious symptoms of chest affection presented by the second, from the two facts now cited the conclusion may be safely and fairly drawn, that symptoms similar to those indicating an organic lesion of the stomach or lungs may disappear, during the employment of a medicine, which, like mercury, must on the contrary exasperate those symptoms, if the organic lesion which the latter seemed to indicate really existed. This lesion is, however, the common termination to which every affection tends, which, by its continuance in a tissue, more or less modifies its nutrition. Thus we are satisfied that the disturbance of digestion, which manifests itself after intense mental emotions, intellectual fatigue, or excesses in masturbation, is owing to the suspension, or rather to the perversion which that portion of the nervous system undergoes, which, in the normal state presides over the act of chymefaction. It is not then an inflammation at first; but it is no less true, that if this perversion of the innervation is prolonged, the nutrition of the different tissues of the stomach becomes deranged, congestions are set up, and what was at first but a neurosis, becomes changed into a serious organic lesion. Thus many cancers of the stomach may be referred for their origin to strong mental emotions; thus also, attacks of vomiting, which at their commencement were calmed by opiates. and then appeared to be purely nervous, subsequently change character, and become symptomatic of real gastritis. In such cases it does not seem to us that it is merely one and the same disease, which in its various degrees assumes different shades in its symptoms and its treatment; our opinion is, that there is actually a transformation of one disease into another. We think it any thing but good physiology to see, in every change in the functions of the stomach, nothing but a result of irritation varying merely in degree. Persons then think of nothing but of combating the inflammation by blood-letting, forgetting that oftentimes this inflammation is itself an effect, and that by blood-letting they do not at all come at the cause which produces it. It is this cause which it should be their chief business to check, to find, and to combat. It was in this way that those physicians reasoned who attended the two last patients whose cases we have given, and they succeeded. If besides it is true that ulceration of the skin, of the buccal and pharyngeal mucous membrane are to be referred to the syphilitic virus * as their cause, and that the mercurial mode of treatment is successfully employed against them, we do not see why ulcerations, or other lesions of more deep seated parts of the mucous membranes, might not also recognise the same cause, and yield to the same mode of treatment. Numerous and accurate observations can alone decide this question, and for such observations science still waits.

---

* We entreat the reader to observe that the success of the mercurial treatment in such cases is attested by too large a number of facts to be called in question, even when the existence of the syphilitic virus should not be admitted.

CHAPTER IV.

OBSERVATIONS ON LEAD-COLIC, AND ON SOME OTHER DISEASES OF THE DIGESTIVE PASSAGES WHICH RESEMBLE IT WITH RESPECT TO THEIR SYMPTOMS AND THE TREATMENT SUITABLE TO THEM.

The history of lead-colic has been already carefully traced by several writers; nor would we have spoken of it in this part of the work, had not many points of the history of this disease lately become an object of discussion, in consequence of the new medical doctrines. What is its nature? In what state is the digestive tube found in those who die? What sort of lesion does it occasion, consecutively, in the functions, or in the organisation of the nervous system? Is the disturbance of this system always consecutive on the lesion of the digestive passages? is it not sometimes primary? What is the best treatment to be employed in this disease? Are the therapeutic means, which suceeed in removing the colic itself, equally effectual in destroying the effects which depend on the alteration of the nervous centres? Does the colic produced by the preparations of copper, in which there is diarrhœa, whilst there is constipation in lead-colic, call, however, for the same treatment as the latter. Lastly, may not the consideration of the symptoms of this species of colic, and of the treatment employed in it, not only without danger, but even with advantage, and the consideration also of the state in which the digestive tube is found in such circumstances, may it not, I say, contribute to throw some light on the nature and seat of different abdominal pains, which, appearing to reside in the digestive passages, seem, however, to depend neither on a peritonitis nor on a real enteritis? From the fact that patients labouring under lead-colic, bear with impunity strong doses of the most violent drastic purgatives, we must not certainly conclude, as many persons do, that the gastro-intestinal mucous membrane possesses but very little sensibility; for this membrane is then no longer in its healthy state; but we may be allowed, at least, to draw this consequence, that other states of the system may also present themselves where the natural sensibility of the intestinal mucous membrane being below its normal state, stimulants of a more or less energetic nature may be brought in contact with it with impunity; this same circumstance takes place normally in certain individuals, as may be seen in several of the cases already cited in the preceding part of this work. We trust the following observations will serve to clear up some of the questions now started.

FIRST ARTICLE.

STATE OF THE DIGESTIVE TUBE IN PERSONS WHO DIED WHILST LABOURING UNDER LEAD-COLIC.

Several writers have stated that, in patients who die during the existence of lead-colic, the intestines are found contracted, and their calibre perceptibly diminished. Desbois de Rochefort says that in two cases he found intestinal intus-susceptions. Many physicians now think that lead-colic is but a variety of gastro-enteritis, and consequently, that post-mortem examination should detect in the digestive tube, traces of inflammation, more or less intense: up to the present, I am not aware that any autopsy has justified this view of the matter. But, even though some cases might be cited in which an intestinal inflammation was found, still that would not decide the question; for we might be warranted in considering this inflammation, merely as a simple complication of lead-colic, if other cases were brought to show, that in persons who also died during the course of this colic, the digestive tube presented no species of appreciable alteration. Now, this absence of lesion is proved by the facts which we are now going to cite.—Out of more than five hundred persons affected with lead-colic, who, during the space of eight years, were treated at the Charité, in the wards of M. Lerminier, only five died, whilst they were placed under the ordinary treatment of colic, and again, of these five individuals, there were two at least, who died with symptoms totally unconnected with lead-colic.

CASE 1.—*Colic.—Sudden death occasioned by a rupture of the aorta. No lesion found in the digestive tube.*

A house-painter, thirty-three years of age, had been already treated twice for colic at the Charité, when he entered it for the third time in the commencement of the summer. He presented all the symptoms of lead-colic: acute abdominal pains, which were neither increased nor diminished by pressure; the abdominal parietes retracted; vomiting, obstinate constipation, state of tongue natural, pain in the limbs, apyrexia. Since the last fifteen days he had had no stool, and since the last five days only, the abdominal pains began to appear. The patient had taken some castor-oil when at home, which had not overcome the constipation. Immediately after his admission the ordinary treatment of the Charité was commenced; he was as yet but on the third day of this treatment, and was but very slightly relieved, when he all at once complained of an unusual pain towards the precordial region, and in the course of a few minutes he expired.—The post mortem showed that the cause of this sudden death was a complete laceration, a real perforation of the portion of the aorta contained in the pericardium; this sac was filled with a coagulum of black blood. In consequence of the disease for which this person had been admitted, we examined his digestive tube with the greatest care; it was the first time we had an opportunity of opening the body of a patient who died during the existence of lead colic.

What struck us at first was the total absence of contraction of the digestive tube; the convolutions of the small intestines, as well as the different portions of the colon, were on the contrary, rather dilated. The peritoneum was healthy. The inner surface was whitish; its mucous membrane of ordinary thickness and consistence; it was covered with a considerable quantity of thready mucus. The duodenum presented its cryptæ developed as usual; it also was white and healthy. We merely found in the jejunum and ileum some few points where there existed a submucous vascular arborisation. The inner surface of the cæcum, colon and rectum was white, and the mucous membrane presented no alteration with respect to thickness and consistence. The large intestine contained but a small quantity of hard fæces. This case is certainly one of those wherein we found the digestive tube as free as possible from any trace of inflammation: however, the patient died of rupture of the aorta, whilst his colic was still very severe; the intestinal mucous membrane had not even been permanently reddened by the drastic purges. Let it not be said that, in this case, the gastro-intestinal mucous membrane was pale in consequence of the hemorrhage which occurred towards the termination of life; for this hemorrhage was very slight; there was not half a pound of blood effused into the pericardium *.

---

* It may be laid down as a general principle, that the very sudden death which follows rupture of the heart or large vessels still contained within the pericardium, is not owing to the great quantity of the blood effused into this membranous sac.

CASE 2.—*Colic.—Death by cerebral hemorrhage.—Digestive tube healthy.*

A middle-aged man, engaged in the manufacture of white lead, had been for some days complaining of acute abdominal pain with all the symptoms of lead-colic, when he entered the Charité. On the following day he had an attack of apoplexy, of which he died at the end of two days ; drastic lavements had been employed without any evacuation being occasioned by them. The autopsy detected considerable effusion of blood like currant jelly in the substance of the right cerebral hemisphere, external to and on a level with the corpus striatum and optic thalamus of this side. The stomach presented some slight sub-mucous injection towards the great cul-de-sac ; it was white everywhere else. The small intestine presented some little sub-mucous injection, principally residing in the veins of a moderate calibre ; the mucous membrane itself was every where pale ; so was that of the large intestine also. The calibre of the digestive tube was neither diminished nor increased. Unless it be said that the cerebral congestion had acted as a revulsive in this individual, and thus caused the intestinal irritation to disappear, it must be admitted in this case also, that the lead-colic did not depend on a gastro-intestinal inflammation.

CASE 3.—*Colic.—Alarming nervous symptoms. Slight redness of the transverse colon over a small portion of its extent.*

A man, about fifty years of age, a plumber, entered the Charité with a violent attack of colic, which he had been labouring under for the last few days. We commenced with the ordinary treatment. On the third day, being somewhat relieved, though still suffering severely, he was seized suddenly with very severe nervous symptoms which shall be described presently, and in two hours after he died.

On opening the body, the gastric mucous membrane was found in the normal state. All the small intestine was found to be white, except in several detached points, which taken together might equal a foot in extent ; here we observed considerable injection, not sufficient, however, to destroy the transparency of the intestinal parietes. The large intestine was white and healthy, except to the extent of three or four inches towards the end of the transverse colon, where some redness was observed.

The digestive tube here presented some slight alterations which did not exist in the preceding cases ; but surely no one will pretend to refer the symptoms observed during life to them, there being very few bodies in whose intestines similar lesions are not found occasionally.

CASE 4.—*Colic—Epilepsy—Sudden Death—Slight redness of a small portion of the transverse colon : black colouring of the follicles.*

A painter, about thirty-eight years old, entered the Charité in consequence of lead-colic. The day after his admission he had an attack of epilepsy. On the following days the abdominal pains continued, but were not severe ; the ordinary treatment was resorted to. Ten days after his admission, the colic still existing, this patient died suddenly. On opening the body nothing was found in the stomach but a slate colouring of the mucous membrane towards the pylorus, to an extent equal to about two five franc pieces. The small intestine was white, except towards the summit of some valves, where slight redness was observed, which consisted merely in a vascular arborisation, not at all considerable, when these valvulæ were unfolded. Immediately above the cæcum we found a large Peyer's patch with black points ; on the cæcum also some detached follicles were found with a black point at their centre. Nothing worth notice in the rest of the large intestine ; it was white, except towards the termination of the transverse colon, where a reddish band was observed about one inch in breadth, and from two to three in length. Where this band was, the mucous membrane lost a little of its consistence.

The unusual colour observed in a portion of the stomach, the black points on the follicles of the termination of the small intestine and of the cæcum, are chronic states which cannot be considered as having any connexion with the symptoms presented by the patient during his stay in the hospital. The slight colouring of some of the valves of the jejunum, the red band found in the colon, appear to us to be lesions too inconsiderable on the one hand, and on the other hand are found too often under every possible state of things, to allow us to refer to them the special symptoms which characterise lead-colic. We shall recur again to the state in which the nervous system was found in this patient.

CASE 5.—*Colic—Paralysis of the upper extremities—Suddenly symptoms of asphyxia and death—Some redness in different parts of the intestine.*

A plumber about fifty years of age, who had had colic several times, was labouring under it for the last three weeks when he entered the Charité. The pains were not violent, but continual, and from time to time they became very acute. There was obstinate constipation. Further, this individual had complete paralysis, affecting the motion of the upper extremities. The usual treatment was commenced. On the fourth day there was a tracheal rale ; a state of asphyxia, and death.

Here also for the present we shall speak only of the state of the digestive tube. The stomach was distended by a moderate quantity of liquid. Towards the great cul-de-sac, a portion of its mucous membrane about the size of the palm of the hand was found softened. Over this same extent it was white, except in two points, where two reddish patches existed, one of which was about the size of a twenty sous piece, and the other that of a forty sous piece. Every where else the mucous membrane was white, and of the natural consistence and thickness. The small and large intestines were rather dilated than contracted. The small intestine presented here and there slight sub-mucous injection (as was to be expected from the kind of death of which the patient died). The mucous membrane of the cæcum presented a red patch of the breadth of a piece of three livres at most. The end of the large intestine was white; we merely observed some large veins passing beneath the mucous membrane. We found here no other lesion worth remarking, except softening of a portion of the mucous membrane of the stomach ; but it was not on this softening that the colic depended, which, moreover, in this individual was less violent than in the preceding patients.

Thus, then, in all those who died whilst labouring under lead-colic, and whose bodies we had an opportunity of opening, not one presented in the digestive tube any lesions by which we could account for the symptoms of the disease. To the five facts now cited we might add a sixth, which is contained in a memoir of M. Louis on sudden and unexpected deaths. The patient, whose case he has detailed, died suddenly, eight days after he had been attacked with lead-colic.

CASE 6.—*Lead-colic treated by the modified method of the Charité. At the end of a month the appearance of nervous symptoms—Death—Nothing found in the intestines.*

On the 28th of November, a man of about forty-six years of age, employed in the manufactory of Clichy, entered the Charité, where he was placed in the wards of M. Fouquier. The principal symptoms presented by him were the following : pain in the abdomen, and more particularly along the course of the colon, constipation, pain of head ; the abdomen was not depressed. This person was treated according to the Charité method modified by M. Fouquier, without any obvious improvement ; the colicky pains continued a very long time, he complained of them almost every day.—Such was the state of the patient, when on the 2nd of January he felt a little numbness and sense of formication in the extremities. On the evening of the 5th he uttered several shrieks, and was seized with convulsions, which were succeeded by loss of speech and motion. At the visit of the next morning his countenance was pale, his look was stupid; his head was inclined to the right, his intellectual faculties were abolished, sensibility was entirely destroyed; the power of motion, which was at first abolished, was somewhat restored; the patient occasionally carried his hand to his mouth, and moved his legs tolerably well. (General bleeding, sinapisms to the legs, laxative mixture, etc.) The sinapisms produced no effect. On the 7th the eyes were entirely carried to the right, the patient understood somewhat better the questions put to him; the pulse was small; there were convulsive movements, and considerable gurgling in the throat and chest. (Blisters to the legs). On the following night he uttered some inarticulate cries and expired.

Post mortem.—The face indicated that death had been painful, the features were drawn and inclined to the right. The abdomen having been opened, the stomach was found to be healthy; nothing remarkable in the intestines; only in some few places they were contracted and slightly strangulated, but without any trace of inflammation. The external surface of the brain was injected, its substance a little more dense than natural; the ventricles contained no serum; spinal marrow was healthy.

ARTICLE II.

SYMPTOMS OF LEAD COLIC.

We shall not here dwell on the ordinary symptoms of this colic, as the description of them may be had everywhere. We shall merely notice the following particularities: it is not correct to say that the abdominal pain experienced by persons labouring under lead colic is invariably diminished by pressure, as in a great number of cases this pain is neither increased nor assuaged by it; and sometimes even pressure increases its severity. Yet in these different cases the other symptoms of the disease remain the same; and the same treatment succeeds. Neither is the abdomen uniformly retracted, nor do the abdominal parietes appear always depressed towards the umbilicus. It is probably as common to find the abdomen retain its usual form and ordinary dimensions, or even become larger and more developed than usual, which seems to depend on the distension of the intestines by solid substances or gases. The most constant and invariable phenomenon is constipation; it precedes the colicky pains, and the latter diminish as soon as alvine evacuations commence.

But the digestive tube is not the only organ affected in persons who have absorbed the particles of lead. The nervous system is frequently influenced by such absorption in a very remarkable manner. Thence result, according to the idiosyncrasy of the patient, or according to the part of the system more particularly affected, or according to the degree in which it is affected, various phenomena, which are most frequently developed in the organs of the life of relation, though sometimes also in those of the life of nutrition.

The most common of these nervous disturbances consists in pains felt by the patients in the extremities, and principally in the arms; those pains often precede the colic; sometimes they constitute the only phenomenon, and the functions of the digestive tube are not at all disturbed; whence we must conclude, contrary to the opinion of some writers, that they are not merely sympathetic of the intestinal affection. These pains are often accompanied by unusual weakness in the muscular action of the part wherein they are felt, and by degrees this weakness becomes changed into real paralysis. Thus we find exaltation of the normal sensibility, and diminution of motion, combined in this case. What then takes place in the extremities appears very analogous in its nature to that which takes place in the intestines, where, at the same time that pain exists, there also appears to be a diminution in the strength of the normal contractility of the muscular tunic, as also of the sensibility of the mucous membrane, which bears with impunity the contact of the most drastic purgatives.

The most ordinary paralysis in persons who handle lead is that of the extensor muscles of the hand; hence, in consequence of the equilibrium of muscular action being destroyed, there arises an habitual predominance in the contraction of the flexor muscles of the hand, and consequently permanent flexion of the wrist, which remains inclined so as to form almost a right angle with the bones of the fore-arm. The fingers also become flexed on the wrist; the different phalanges are then observed to be inclined one upon another.

This paralysis most usually comes on only in persons who have been a long time employed in preparations of lead, and have had colic several times. However, we have seen it come on in some cases where the patients had been but a very short time exposed to the influence of lead, and where they had never had any attack of colic previously. In some cases it disappears rather promptly; at other times it does not disappear till after a considerable time; whilst at other times it is altogether incurable.

Paralysis, occasioned by the preparations of lead, is not always limited to the wrists. We have seen it affect the entire upper extremities, which became altogether deprived of motion. We had twice an opportunity of examining the bodies of persons attacked with this species of paralysis. One of these patients had colic at the same time when he entered the Charité: this was one of those of whom we have already spoken, in reference to the digestive tube. The other had had colic long before, but no trace of it remained at the time he came under our inspection. In the former the paralysis commenced only some weeks before, whilst in the latter it was of several months standing. In both, the upper extremities were entirely deprived of the power of motion: when raised, they fell back as inert masses: still rather sharp pains were felt in them from time to time, and the sensibility of the skin was still retained. In both, the intellects were unimpaired, and the power of speech perfectly free. Both died also in the same way; their respiration became suddenly impeded, the tracheal râle set in, and they died in a state of asphyxia, nearly like animals in which the two pneumo-gastric nerves were divided, when they survive the operation for some days, and die of infarction of the lung.

From the group of symptoms observed during life, it was less in the brain than in the spinal marrow that one should expect to find any organic change. The encephalic mass, when carefully examined in its several parts, presented nothing remarkable. The spinal canal contained a small quantity of limpid serum, such as is found in most bodies. The membranes of the spinal marrow were pale; the marrow itself, examined from its junction with the tuber annular to its lower termination, presented no appreciable alteration in its colour, consistence, or in any of its physical properties. The cervical plexuses, as well as the nervous chords which pass from them, the pneumo-gastric nerves from their origin to their termination in the stomach, were also found exempt from all manner of lesion. The lungs were simply engorged. The other organs of the chest and abdomen were found healthy, except the stomach of one of the two patients, which was softened in a small portion of its extent, as we have already stated. There is no doubt but in both these individuals some point of the cerebro-spinal axis was seriously changed; but this change was proved only by the symptoms, and not at all by anatomy.

o o o

In other individuals, but much more rarely, we have ascertained the existence of complete or incomplete paraplegia, with exaltation of the sensibility, and acute pains in the paralysed limbs. In several, the upper extremities were not at all affected; in others, there was at the same time greater or less debility of the upper extremities,

Instead of paralysis, we have sometimes observed in persons exposed to the influence of lead preparations, convulsive movements, and attacks of an epileptic form. The following is an instance of it, with the post-mortem examination.

Case 7.—*Lead colic—Symptoms of epilepsy—Sudden death—No appreciable lesion on the dead body.*

A house painter, about 38 years of age, had colic at the time he entered the Charité. On the day after his admission he had an attack of epilepsy, which was prolonged for a considerable time, and was followed by a state resembling apoplexy, which lasted from 30 to 40 hours; whilst it lasted, the patient appeared to be in the last agony. However, these alarming symptoms disappeared, he recovered his intelligence and power of motion, but the mental faculties still remained a little dull. The countenance was pale and expressive of distress; the colicky pains continued, though not severe. Some days passed on in this way. One evening when the patient was replacing himself in his bed, which he had quitted for an hour or two, his features suddenly altered, and he died unexpectedly. The post mortem took place fourteen hours after death. The membranes of the brain were pale; the encephalon presented no trace of sanguineous congestion; when sliced, it scarcely presented any red points. Very little serum in the ventricles. Nothing remarkable in the remainder of the nervous portions contained in the cranium, nor in the spinal marrow or its nerves; neither was there any thing remarkable in the thoracic ganglia of the great sympathetic, in the nerves which are sent off from them, in the semilunar ganglia, or in the different abdominal plexuses. Healthy state of the pulmonary parenchyma, as also that of the heart and its vessels. Nothing remarkable in the abdomen, except the very slight lesions of the digestive tube already noticed. Again, there are other individuals affected with lead colic, whom we have seen die unexpectedly, though they had not previously presented any remarkable nervous symptom, and in whom also the post-mortem examination did not detect any appreciable lesion in the nervous system.

ARTICLE III.

TREATMENT OF THE EFFECTS PRODUCED BY LEAD PREPARATIONS.

Several eminent physicians treat lead colic at the present day as Haen treated it long since, by a method purely antiphlogistic. Unquestionably several patients treated in the ordinary way recover perfectly well; but we think it right to remark with respect to this matter, that every time the colic is assuaged, the patients are free from it spontaneously at the end of a longer or shorter time, provided they cease to handle lead. It is not our object to consider here the results of such a practice, we merely state what we have seen; for we are not drawing up a treatise on pathology, we are merely collecting materials. Now, from five hundred cases newly treated in the wards of M. Lerminier, labouring under affections produced by lead, we have no hesitation in drawing the four following conclusions with respect to the treatment of these diseases:—

1st. Lead colic, treated by blood-letting and emollient drinks, has in general a much longer duration than colic treated by the method called that of la Charité.

2ndly. Many colics which have resisted the antiphlogistic treatment, yield promptly to that of la Charité.

3rdly. We never have seen the latter treatment fail in removing colic, sometimes only it must be recommenced three or four times consecutively in order that the cure may be complete. In other patients all the symptoms cease the moment that evacuations upwards and downwards have been procured.

4thly. The treatment of la Charité, when conducted with prudence and administered at the proper time, we never found to occasion any species of unpleasant consequence: it is certainly very remarkable that such powerful drastics can be brought in contact with the intestinal mucous membrane without inflaming it, without lighting up fever, withour modifying the state of the tongue, or producing disturbance of any kind; but it must not be forgotten that the digestive tube is then placed in a very peculiar condition. Do we not see in the same manner certain therapeutic agents in certain nervous diseases no longer retain their usual mode of action? Thus, in tetanus, enormous doses of opium may be administered with impunity; in apoplexy too it often happens that tartar emetic no longer produces vomiting, nor do the most active lavements procure any alvine evacuation.

Workmen very often enter the Charité who, labouring for some time under lead-colic, have had leeches applied in great numbers over their abdomen, have taken baths, and have been put on milk diet. Some of these are relieved, but not completely cured: the constipation remains, abdominal pains, more or less severe, continue to be felt, etc. When they enter the Charité in this state they are soon cured under the influence of the drastic mode of treatment. We have seen several other patients who had not even derived the slightest relief from the employment of antiphlogistics, and whom the Charité treatment cured promptly and completely.

No doubt can be raised in these cases with respect to the real efficacy of the therapeutic method, its effects are too well marked. Observe and interrogate the patients; they have scarcely begun to have very copious evacuations up and down, when the intolerable pains which they felt cease as if by enchantment. Their countenance which became seriously changed, all at once reassumes a natural appearance; they congratulate themselves on their prompt recovery, and those who, having had colic more than once, were already cured of it by the Charité treatment, solicit it earnestly when they are again attacked, and feel no doubt of its success.

When there is fever, and when pressure on the abdomen perceptibly increases the pain, must we also employ the ordinary treatment? Our observation on this point is as follows: in several individuals the treatment, having been commenced notwithstanding these unusual symptoms, was of necessity discontinued, because the state of the patients became worse; but at other times this treatment, employed under similar circumstances, succeeded notwithstanding. According as evacuations were procured, the pulse returned to its natural rhythm, the heat of skin was diminished, and the pains disappeared. In this second case is there but the mask of inflammation, whilst it really existed in the first*?

Do the different nervous symptoms which accompany or follow lead-colic, and which may also exist without it, yield to the same mode of treatment as this colic itself? The certainty of the success of this treatment is here much less. We think, however, that in such cases we should try it at first. We have in fact seen its employment completely remove either the pains of the limbs or their paralyses, or several other nervous phenomena already noticed.

---

* We have lately employed croton oil at the Pitié in some cases of lead colic; speedy relief was the result of it, and a complete cure was promptly effected.

We very recently met the case of a house painter, who having never had colic, felt for nearly the last five months in the membranes of the head acute pains, which were at first considered as rheumatic, and ineffectually treated by bleeding, and both simple and sulphureous vapour baths. He entered the Charité, and was put under the ordinary treatment of lead-colic, and went out cured. With respect to the paralysis it must be still recent and incomplete, in order that it may disappear under the influence of the ordinary treatment of colic. If the case be otherwise it resists, and it then becomes necessary to employ medicines whose direct effect is to excite muscular contractility. For this purpose we have seen blisters applied to different points of the arms, and in the vicinity of the brachial plexus with variable success, divers frictions also, and stimulating douches, the different preparations of the nux vomica, either its extract or strychnine, or, instead of the latter, another vegetable alkali, brucine, which, having a similar mode of action, may be more easily managed by reason of its being much less energetic *. The following facts will give an idea of the mode of action of these two alkalies, and of their influence on the paralysis produced by lead preparations; we shall add to them, for the purpose of comparison, some other cases wherein these same alkalies were employed in the treatment of other species of paralysis.

A.—EMPLOYMENT OF STRYCHNINE.

THE strychnine given to the patients who form the subject of the following cases was the purest possible; it was entirely deprived of brucine, with which it continued mixed in the first preparations of it by Mr. Pelletier. It was given in the form of pills, some containing only one-twelfth of a grain of the alkali, and others one sixth.

1. A house-painter, who had had colic several times, entered the hospital having entirely lost the power of motion in both hands, which remained habitually flexed on the anterior surface of the fore-arm. This paralysis commenced about a month before; it had been treated without effect by stimulating frictions applied to the fore-arm. This individual took two pills, containing one-twelfth of a grain each, one in the morning, and one in the evening. He felt, to use his own terms, a sort of painful fremissement along the extensor muscles of the hands. On the three following days the same dose was given, and with the same effects. On the fifth, sixth, and seventh day, four pills were given, two in the morning and two at night: slight shocks of the limbs; spasmodic contraction of the extensors of the fingers, during which there was forcible retroversion of the fingers towards the back of the hand; the paralysis appeared to lessen. Pills were then given to the patient, containing one sixth of a grain; one at first, then four after the lapse of eight days. During this time he felt some violent shocks. He soon left the hospital, complaining of nothing but a little weakness in the hands.

In this individual the dose of strychnine could not have been raised without danger beyond two-thirds of a grain per day.

2. Another painter was affected with the same disease as the preceding, and for nearly the same length of time. One single pill containing one-twelfth of a grain occasioned a slight trismus, and the commencement of tetanic rigidity in the muscles of the nucha, abdomen, and extremities. On the following day he took another pill, and being now somewhat accustomed to it, he experienced but some few spasmodic contractions in the extremities. After the lapse of six days, two

---

* I have shown elsewhere (*Journal de Physiologie Experimentale*, t. iii., and *Annales du Cercle Medical*, t. iii.), that six grains of pure brucine are necessary to produce the effects of one grain of impure strychnine, and of a quarter of a grain of pure strychnine.

pills were given, one in the morning, and one at night: there were violent contractions of both arms. The strychnine was continued at this dose for about fifteen days, at the end of which time the paralysis was removed.

3. A German of a strong constitution, and affected for a long time with paralysis of the extensors of both hands, arising from the influence of lead, took a pill containing about one-twelfth of a grain, without feeling any effect from it: three pills were then given to him with impunity. On taking the dose of one-third of a grain, he began to experience some shocks; they soon ventured to give him a little more than one grain of strychnine. On taking this dose the contractions became so strong, as to induce the necessity of reducing it to a single grain. This person did not experience any relief.

On comparing this case and the preceding, one may see how the action of strychnine may vary, in consequence of the varying susceptibility of different individuals.

4. A man who was in the habit of handling white lead had the same kind of paralysis as the preceding. A pill containing one-twelfth of a grain, occasioned rather violent trismus in him. On the next day another pill was given to him, and this time, as in the subject of the second case, he felt no effects from it. Two pills produced rather violent shocks in the limbs. In a little time the dose of strychnine was raised to two-thirds of a grain; but that dose could not be increased, in consequence of the tetanic symptoms which then manifested themselves. When the patient left the hospital, he was less paralysed.

5. In another individual paralysed like the preceding, the dose of strychnine was increased in twelve days to a grain; he had but some slight contractions. The dose was still increased; from that time there was a closing of the jaws, and a retroversion of the head. The patient became alarmed at this, and would take no more of the pills. He left the hospital without being relieved.

6. A person entered the hospital affected with incomplete paraplegia, which had been treated ineffectually by blisters, moxas, and cauteries, applied to the lumbar region; no deviation whatever of the spinal column. A pill containing one-twelfth of a grain produced no effect, two pills occasioned slight shocks of the lower extremities; the dose was raised to four every day (an entire grain). On taking this dose the patient felt rather acute pains in the lumbar region; there was at the same time rigidity of the lower extremities only; the paraplegia was perceptibly increased, the strychnine was stopped.

In this case the paraplegia was probably the result of a lesion of the spinal marrow, which the strychnine appeared to aggravate.

7. An old man had been affected for a long time with complete paraplegia; he took three pills containing one-twelfth of a grain each, without feeling any effect from them. Four pills (one-third of a grain) produced slight contractions in the four extremities. No more of them were given.

8. A man had remained hemiplegic after an old attack of apoplexy; a pill of one-twelfth of a grain was sufficient to occasion intense tetanic rigidity of the paralysed limbs. On the following days this person, though the strychnine was not continued, experienced violent headaches on the side opposite the hemiplegia; his intellects became dull, the hemiplegia increased; in a word, he presented several of the symptoms which characterise softening of the brain. Did the strychnine produce in this case commencing inflammation around the old apoplectic focus (foyer)?

B. II.—EMPLOYMENT OF BRUCINE.

The brucine pills given to the patients who form the subjects of the following cases, contained each half a grain of this alkali. From the experiments made on animals, we were satisfied that no injurious consequences would follow from this dose.

1. A mixer of colours had paralysis of the hands for about the last two months;

he took a pill without feeling any effect from it, two pills produced slight shocks in the arms, four pills occasioned rather violent contractions. He went out cured.

2. Another mixer of colours, who was also paralytic, took as much as four grains of brucine without any sensible effect; in the dose of four grains and a half he experienced a kind of troublesome formication in the arms; in the dose of five grains, he felt some shocks of considerable violence without any bad consequences. The paralysis was considerably diminished.

3. A house painter, who had paralysis of the hands, did not begin to feel any shocks till he took the dose of two grains. Three grains occasioned considerable trismus. The patient was but slightly improved.

4. A man engaged in the handling of lead, and paralysed as the preceding, experienced tetanic rigidity of the four extremities, after having taken three grains and half of brucine. He was not relieved.

5. A paraplegic patient, after having taken only two grains of brucine, felt an acute pain in the sole of the feet, his lower extremities also became the seat of violent contractions. His state was not improved.

From these cases I think we may deduce the following corollaries:

1st. Pure strychnine acts on man, as the extract of nux vomica, but with much greater intensity.

2nd. The action of strychnine is so energetic that the greatest precautions are necessary to be observed in its employment. Its effects also vary in a very remarkable manner according to the susceptibility of the individuals. Thus, in one, one-twelfth of a grain is sufficient to occasion serious consequences (2), whilst in another the dose of strychnine may be increased almost with impunity to a little more than a grain (3).

3rd. Brucine acts on man as on animals. Much less energetic than strychnine, since we may commence giving it with impunity in the dose of half a grain, it may be substituted with advantage as a medicine, for the alkali of nux vomica.

4th. When considered with respect to their therapeutical properties, strychnine and brucine are found to be more or less effectual, according to the species of paralysis treated with them. When employed in cases wherein the paralysis is connected with an inflammatory state of the brain, or of the spinal marrow, they will in all probability aggravate all the symptoms. In persons who have remained hemiplegic after cerebral hemorrhage, the employment of these alkalies is most frequently unavailing; there is even some reason to dread that they may produce an inflammation of the cerebral substance around the apoplectic focus (8). But there are cases where, as if by a sort of habit, the paralysis seems to continue even after the absorption of the effusion; it may then yield to the alkalies of nux vomica and false angustura. In a word, these same alkalies appear to be principally efficacious against those palsies, whose cause does not seem to reside in an inflammatory lesion of the nervous centres; such, particularly, is that species of paralysis, to which persons engaged in lead manipulations are so frequently subject. The preceding cases attest the efficacy of strychnine or brucine in this species of paralysis: of nine individuals, who were attacked, six were cured, or at least relieved. I might here cite other cases of paralysis of the same kind, which also yielded to the alkaline extract of nux vomica.

ARTICLE IV.

NATURE OF LEAD COLIC.

Is this colic the result of gastro-intestinal inflammation? We can now answer this question in the negative. That would certainly be an extraordinary gastroenterite of which no traces could be found on post-mortem examination; which sufficiently severe to produce the most excruciating pain, should never excite fever, and which should be always cured with certainty by those medicines which were peculiarly calculated to exasperate this gastro-enterite, if it really existed. If there be any fact in medicine of which we are fully convinced, it is that lead-colic is not an inflammation. If we direct our attention to the different nervous symptoms which complicate it, and which may also exist without it, we shall be disposed to think that the symptoms which become developed on the part of the digestive passages, in persons exposed to the influence of lead preparations, are also the result of the disturbance occasioned by the latter in the functions of that part of the nervous centres which presides principally over the digestive tube. Lead-colic is then, in our opinion, a neurosis, in which the spinal marrow and the abdominal plexuses of the great sympathetic appear to be the peculiar seat of lesion. The constipation seems to depend either on the abolition of the contractile motion of the intestines, or on the suspension of the secretion of the intestinal mucus.

ARTICLE V.

OBSERVATIONS ON CERTAIN MORBID STATES, WHICH, BY THEIR SYMPTOMS AND THEIR TREATMENT, BEAR MORE OR LESS RESEMBLANCE TO THE PHENOMENA OCCASIONED BY THE PREPARATIONS OF LEAD.

The symptoms of lead-colic sometimes manifest themselves in persons who were never exposed to the influence of any preparation of lead; it seems then, that the modification made by the action of lead on the nervous system may be produced spontaneously; from whence the same phenomena will result, which will yield to the same treatment, more or less modified. On this point, we shall cite the following fact which we selected out of several others resembling it at the Charité.

Case 8.—*Abdominal pains simulating those of Lead Colic—Repeated employment of Castor-oil—Cure.*

An individual, thirty-eight years of age, of a strong constitution, had not been at stool for some days, when, on the morning of the 22nd of June, he was seized on a sudden, at the time he was going to breakfast, with acute abdominal pains, the seat of which were principally around the umbilicus. At the time he took an opiate mixture. In the course of the day the pains were a little mitigated, but during the night they re-appeared with renewed intensity. We saw him on the next morning, when he was in the following state: countenance was pale and expressive of the most intense anxiety; the eyes were dull and sunk; the pains of the abdomen were very acute, and even intolerable; pressure neither increased nor relieved them; no stool; tongue natural; no vomiting; complete apyrexia; two ounces of castor-oil were prescribed; seven very copious alvine evacuations took place. In the evening the patient found himself considerably relieved; he slept well during the night. On the 24th he again took some castor-oil. On the 25th he no longer felt any pain. On the 26th some small red conical pimples appeared over the abdomen; two days after these spots disappeared. The patient went out perfectly well.—In this case the abdominal pains readily yielded the moment that alvine evacuations were obtained. In other instances we have seen these pains much more obstinate, and disappear at intervals in order to return again. We saw them in one case continue for more than a month, not constantly but so that they returned by irregular succession, which gradually became more distant, less severe, and ultimately terminated no longer to re-appear. In this case, moreover, we observed a phenomenon which was not observed in the other patients; when the pain re-appeared, a very hard tumour, seemingly formed by the intestinal convolutions packed together, presented itself in one point of the abdomen; this tumour continued as long as the pain was felt; it disappeared along with it, and then the abdomen again became soft and free from pain; there never was the least appearance of fever. At the commencement of this disease leeches were repeatedly applied to the abdomen without any benefit. Castor-oil was then given several times, which, every time it was given, produced very copious alvine evacutions; different preparations of opium were also given several times.

There is another species of colic which presents symptoms more evidently inflammatory than the preceding species, that which is attributable to the habitual handling of copper. It is frequently observed at the Charité in copper-founders, and in other persons who are employed in various kinds of copper works. This colic differs from lead colic, 1st, in the less severity of the pain; 2ndly, in the existence of purging; 3rdly, in the greater frequency of an accompanying fever; in a word, it appears to be much more than lead colic, the result of a real inflammation of the digestive tube. However, in such cases, we have frequently seen M. Lerminier successfully employ those active evacuants which form the basis of lead-colic; the number of the stools, thus artificially produced, then diminished, and after copious vomiting and profuse alvine evacuations had been obtained, the health was re-established. Would it not appear that the good effects of purgatives in such cases was owing to their promptly expelling from the system the coppery particles which occasioned the phenomena?

We shall cite here a single fact of this kind, remarkable for the symptoms of dysentery which existed.

Case 9.—*Colic from Copper—Symptoms of Dysentery—Ordinary treatment of Lead Colic—Rapid cure.*

A copper founder, about fifty years of age, had been in the habitual enjoyment of good health. When he entered the Charité, he had been suffering for about fifteen days abdominal pains, which at intervals became so acute as to occasion faintness.

Since the last eight days he felt very painful tenesmus; he was tormented with a continual desire to go to stool, and then, after great straining, passed nothing but some thready mucus, frequently tinged with blood. The abdominal pain was not increased by pressure; the tongue had a natural appearance, the countenance was pale, and the features sharpened; there was but slight acceleration of the pulse without much heat of skin.

On the first day M. Lerminier ordered fifteen leeches to be applied to the anus. On the next day no improvement was observed; he then resolved on employing the treatment for lead-colic. From the second day, after copious evacuations, the abdominal pains were very much diminished, the tenesmus was gone. This treatment was continued; all the symptoms of dysentery ceased, and the patient soon left the hospital in perfect health[*].

---

[*] Even in cases where the dysenteric symptoms are not produced, as here, by a specific cause, a treatment different from that which is properly called the antiphlogistic treatment may be employed with undeniable benefit. For the last two years we have given to all the patients labouring under dysentery, who were admitted into our wards at the Pitié, twenty-four grains of ipecacuanha. All, after having vomited more or less copiously, have been cured very rapidly, and from the second or third day at most after the administration of the ipecacuanha the symptoms of dysentery disappeared. In all the dysentery was rather slight, and was not accompanied by any febrile disturbance.

SECOND BOOK.

ON DISEASES OF THE LIVER,

AND ITS APPENDAGES.

1. The liver is one of the organs whose diseases, by reason of their severity and frequency, have been most studied; and yet among the numerous alterations, of which it may be the seat, there are still several whose nature is far from being well determined, and whose symptoms are very obscure. What is now about to be presented to the reader is not a treatise on diseases of the liver, but some researches and observations on several points of the history of these diseases. Besides that a treatise of this kind does not enter into the plan of our work, we think that the time is not yet come, when we can publish with advantage a complete history of the diseases of the liver; those who may at a future period engage in such an undertaking, will be enabled to find some useful materials in our work, which is the principal end we have in view. In our first section we shall speak of affections of the parenchymatous structure of the liver; and in a second, of those of the passages for the excretion of bile.

SECTION I.

DISEASES OF THE PARENCHYMA OF THE LIVER.

CHAPTER III.

LESIONS FOUND IN THE LIVER AFTER DEATH.

2. Of the different alterations of the liver some are preceded or accompanied by a greater or less afflux of blood; in others, on the contrary, there is a real or apparent diminution in the quantity of blood which the liver should receive in its normal state: such is the first result to which observation leads. The morbid states wherein increase afflux of blood may be demonstrated directly or indirectly, are increase in the size of the liver, its hypertrophy, its induration, the formation of pus or of other accidental products within its parenchyma. The morbid states wherein it seems that a diminution in the afflux of blood should be admitted, are its loss of colour and its atrophy. We may designate, if we will, the different morbid states of the liver where there is increased sanguineous congestion by the generic term *hepatitis*; but it then becomes necessary to understand the import of this term, and not to suppose that, once adopted, it will account for the changes of nutrition, as numerous as they are varied, which the hepatic organ may present: all that it indicates is the common element which concurs in the production of these changes, namely, sanguineous congestion. But what is

the cause of the numerous differences of these changes? It cannot certainly be found in the duration or intensity of the sanguineous congestion; for whether it be short or long-continued, intense or slight, we perceive every kind of change of nutrition indifferently produced. For the development of each of these species, it is therefore necessary to admit certain peculiar elements whose nature escapes us, and whose existence, however, appears to me as clearly demonstrated as is that of that of the common element of sanguineous congestion. There are cases, moreover, where it is only by analogy and by the generalising of particular facts, that this common element can be admitted; for the symptoms did not discover it during life, and after death its existence is asserted or supposed only by considering the products found in the liver, products which we see become developed in other organs after sanguineous congestions, whose existence is in general very evident. This is the case with several accidental productions, as tubercles and cancers. It may happen also that even in cases where the liver is found receiving less nourishment than in its normal state, divested of colour and atrophied, this state may have been preceded, like the others, by a sanguineous congestion or an inflammation. In order to justify this assertion, I might find analogous cases in other organs; and in the liver itself I might show between these different cases an identity of symptoms and of occasional causes. Thus, for instance, of four individuals received into the Charité, in whom the origin of the affection of the liver seemed to have been external violence, and in whom also there had been at the onset of the disease pain in the hepatic region, the first presented a deep abscess in the parenchyma of the liver; the second hydatids; the third cancerous masses; the fourth diminution in the size of the organ. These facts are too important to be lost sight of. In admitting also as a consequence of a certain number of facts that atrophy of the liver may result from a primary inflammation of this organ, it does not by any means follow that such must be always the case.

Besides simple atrophy, and its loss of colour, there are probably other pathological states of this organ, the cause of which might also be fairly referred to a diminution and real retrogradation of the act of nutrition. What, for instance, is the fatty degeneration of the liver? If, in order to solve this question, we observe in what cases different fatty substances come to be developed accidentally in the system, we shall see that it is very frequently around or in the site of certain organs which are become atrophied; we shall find, moreover, that that which exists morbidly in man is a law of the physiological state in the animal kingdom; and that, for instance, in beings whose brain is but little developed (as in fishes, etc.), the place which the encephalic mass does not occupy is occupied by an accumulation of fatty substances. Is it not also in the place of the atrophied molecules of the liver that the fat is deposited. What again is the formation of the serous cysts in the substance of the liver? With respect to this point see what takes place in other organs. Should they be arrested in their development, serous pouches are found in them, so that it is possible that several of these cysts of the liver, considered as the result of its inflammatory state, attest probably the existence of an entirely opposite state of diminished nutrition. What is, in fine, the cause of those vesicular worms so frequently found in the liver? Would it be absurd to seek it in an atrophied state of the parenchyma of the liver? We might say that nature, no longer able to nourish this organ, was now confined to an inferior process of organisation, and instead of producing the molecules of an organ of a mammiferous animal, she developed a hydatid. I give those different ideas merely as conjectures more or less probable, but which seem to me unworthy neither of examination nor discussion; they prove at least that there are still researches to be made.

3. The first study to be undertaken in order to arrive at any exact knowledge regarding the nature of the diseases of the liver, is to endeavour clearly to understand their anatomical characters. To arrive at this, the best method in my

opinion is to commence at the consideration of the healthy state of the liver, clearly to determine this, and then to endeavour to ascertain the share which the different anatomical elements of the liver may have in the formation of its different changes of texture. This is undoubtedly the only road which can lead to any useful results. But is it practicable in the present state of science? We shall be able to judge of that by the detail of the researches in which I have been engaged on this head: in trying to enter on a route almost novel, I could not be expected to make much way, but I am obliged to take particular care not to stray from the path.

4. Two substances exist naturally in the liver: they are so arranged as to represent tolerably well the form of a sponge. One of these substances, of a more or less marked white colour, according to the case, represents the solid part of the sponge; it only contains some large vessels which traverse it without ramifying through it: consequently it contains but very little blood. In its areolæ the other substance is as it were deposited, which is red, extremely vascular, of a cavernous appearance, and appearing very susceptible, like all erectile tissues, of increasing and diminishing in size.

In what I consider the normal state of the liver, these two substances are distinct to the observer only when disease has rendered them more prominent. If in this presumed normal state we examine a slice of the tissue of the liver, we find it to consist of an intensely red substance, separated into several compartments by white lines of a slight tinge of rose colour, which interlace in different directions, and form as it were circumvolutions. Does the liver contain a great quantity of blood? The white substance becomes coloured, and the organ acquires a uniform red tint: this exists normally in the fœtus, and accidentally in the adult, under several circumstances which shall be noticed presently. On the contrary, should the liver contain less blood than is compatible with its physiological state, the white substance becomes at first very apparent, then in a still more advanced degree of this species of local anemia, the red substance itself becomes devoid of colour, and the liver presents a whitish tint, in which an attentive examination still discovers the two substances. These different shades of appearance in the liver depend solely on the proportions of blood which it contains, and such must be taken into account. But further, different changes may attack the two substances which I have just described separately or simultaneously, whence there will be occasioned in the liver different appearances which constitute so many morbid states. Let us study first the separate alterations of each of these substances.

A rather common alteration of the white substance is its hypertrophy. In the first stage this is marked by lines and circumvolutions, which remain very apparent, even in the case where the liver is most gorged with blood. In the second stage these lines are seen to become changed into patches more or less extensive; the white substance being thus hypertrophied becomes hardened, and may acquire the fibrous appearance. This hypertrophied substance, modified in its form, in its consistence, and in its colour, might be readily taken for a newly formed tissue, did we not follow gradually its different stages. An error of this kind has in my opinion been committed by Laennec. The lesion of the liver which he called cirrhosis, and which he considered as an accidental tissue, seems to me solely the result of a certain degree of hypertrophy of the white substance. This cirrhosis carefully examined in its different phases of development, seems to me to be no more an accidental tissue than the pulmonary granulations are, which I have elsewhere proved to be nothing else than partial inflammations of the lung.

I have already said that the red substance might be differently coloured and tumefied according to the variable quantities of blood which it contained. It may also undergo real hypertrophy, the result of which will be, according to the case, the granulated or lobulated appearance of the liver. At other times this same red substance undergoes an entire loss of colour, or else it becomes really atrophied; and in this case, there is a diminution in the size of the liver. Finally, it is in the interior of this red substance that the different morbid secretions so often seated in the liver appear to take place.

5. The changes of these two substances separate, or combined in different ways, produce the several morbid states of the hepatic parenchyma. These morbid states are principally: 1st, different degrees of sanguineous congestions, active or passive, vital or mechanical; 2nd, alterations of nutrition; 3rd, alterations of secretion.

6. Sanguineous congestions of the liver are similar to those which may take place in any parenchymatous tissue, in the brain or lung for example. Sometimes the cause which produces them is purely mechanical; an obstacle, for instance, to the free passage of the blood through the right cavities of the heart, whence arises a reflux and accumulation of this liquid in the hepatic vessels. Sometimes this cause is not mechanical; but it does not yet consist in an excess of vitality, in what is called the *inflammatory stimulus*. Such are the congestions existing in the liver in scorbutic individuals. I know not whether such congestions may be called passive in the sense ordinarily attached to this term. But what appears to me very evident is, that nothing less resembles an inflammatory process than those sanguineous congestions which take place simultaneously in several organs in scorbutic persons. Every time I had an opportunity of opening the bodies of those patients, I found the liver very much gorged with blood; this liquid oozed from every part of it, and the tissue of the organ then presented a uniform red tint: a similar engorgement was detected in the spleen. In other cases the blood accumulates in an extraordinary manner in the liver, under the influence of an inflammatory stimulus. This active congestion may continue for a longer or shorter time, without any other alteration supervening, except in most cases a modification in the secretion of bile. If we would keep to mere observation, certainly such a state cannot be distinguished from what is called inflammation, nothing else is found in any of the other organs to prove their inflammation, before there is alteration in their texture; in all, as in the liver, this congestion, whatever be its degree or duration, is accompanied by an increase in the size of the tissue which is its seat, and most frequently by an increase in its normal secretion. In the liver, as every where else, this congestion may remain the only modification which the organ has undergone, and which returns immediately to its normal state the moment it ceases. But at other times it is the origin and commencement of a great number of changes, which become developed in the organ wherein it is seated; and it must be considered as one of the elements of their formation.

Sanguineous congestions of the liver, whatever be their cause, may be either general or partial. In the first case, whatever be their degree, the size of the organ is increased; it is observed to pass more or less beyond the cartilages of the ribs, or to press the diaphragm upwards. Such an increase in size takes place sometimes with great rapidity, and disappears in the same way; this principally happens in those cases of hepatic congestions which accompany diseases of the heart; often then, after bloodletting has been employed, and the circulation becomes less disturbed, the liver ceases somewhat abruptly to be any longer felt; it ascends behind the ribs, and redescends again, if the disease of the heart becomes exasperated. But from the sole circumstance that there is an habitual stagnation of blood in the liver greater than usual, there is a disposition to irritation of this organ, and, after a certain time, to the merely mechanical congestion of the liver there may be added a real active vital congestion; this latter state may continue alone, or be followed by different disturbances of nutrition. Thence the great frequency of consecutive diseases of the liver in persons labouring under organic affections of the heart.

In some cases the sanguineous congestion of the liver is but partial; red spots are found scattered over its surface or through its interior, from which a considerable quantity of blood flows on making an incision. Such partial congestions are seldom the result of a mere mechanical cause; for it is not easily seen why this latter should cause its action to be felt on one particular part of the liver rather than on another.

It is evident that in these different degrees of congestion the red substance of the liver performs the principal part.

These congestions, without any other alteration of texture, constitute a certain number of diseases of the liver, indicated during life by different symptoms which vary according to the intensity of the congestion, its extent, the rapidity with which it has taken place, and the cause which has given rise to it.

Not only under the influence of the conditions just enumerated may the vessels of the liver receive a greater quantity of blood than is allotted to them in their normal state, but moreover, whether there may have been previous congestion or not, they may become ruptured, and so give rise to hemorrhage more or less profuse, an effusion of blood into the parenchyma of the liver, a sort of hepatic apoplexy. The most remarkable case of this kind which I have seen is the following:

M. S. enjoyed tolerably good health, and had never presented any particular symptom indicating the existence of disease of the liver, when one morning on awaking he felt rather ill, and complained of some pains in the abdomen: he expressed a wish to remain in bed, and he was left alone in his bed-chamber. In a few hours after, some one went into his room, and he was found dead. I opened his body in the presence of some other physicians. The organs of the cranium and thorax, in which one might expect to find the cause of his sudden death, presented no change whatever. The peritoneum was found to be filled with a great quantity of black blood partly coagulated; several clots were accumulated principally between the diaphragm and the convex surface of the liver. Towards the centre of the right lobe, and on the convex surface, we discovered an opening large enough to admit the extremity of the little finger. This opening was the orifice of a cavity in the parenchyma of the liver, large enough to contain an egg, and filled with blood. A large vessel, which had been torn, opened on a point of this cavity: a stylet having been introduced, penetrated into the trunk of the vena portæ, of which this vessel was one of the principal divisions. The cause of death and the source of the hemorrhage were now manifest. The parenchyma of the liver had retained its healthy state around the accidental cavity which contained the blood.

Dr. Honore lately presented to the Academy a liver in which were several cavities containing pure blood. In this case we are not certain whether this blood was supplied by torn vessels, or whether it was the product of mere exhalation. In his excellent Essay on Abscess of the Liver, M. Louis has cited the case of an individual in whose liver there was found a cavity as large as a nut, containing a fibrinous coagulum of black blood arranged in concentric layers. No laceration was discovered in any of the blood-vessels.

7. The liver may, as we have already stated, undergo considerable changes in its nutrition, consecutively on a sanguineous congestion variable in intensity and duration. Among these changes, for instance, we must place its general or partial hypertrophy. The increase of size, which may also be general or partial, which it then undergoes, is no longer merely the result of a mere accumulation of blood in its tissue, but rather of an increase in the size or in the number of the molecules of the latter; in other words, under a given volume it contains more solid parts, or has greater density. If this hypertrophy of the liver be general, there is an increase of size in the entire organ; sometimes, however, this size is not increased, but the tissue is denser and harder, and there is more difficulty in dividing it with

the scalpel. Thus in many cases of hypertrophy of the osseous system, the latter has not increased in size, but has only acquired greater specific gravity.

It may happen that hypertrophy of the liver exists only in one of its substances, the other retaining its normal state, or undergoing at the same time a real atrophy. If the latter occurrence takes place, there may result a diminution in the general size of the liver, though one of its anatomical elements may have a greater volume than usual. This is what occurs, for instance, in several cases of *cirrhosis*, which we have seen to be nothing else than hypertrophy of the white substance. At the same time that the nutrition of the latter has attained unusual activity, the red substance has undergone a sort of shrinking, and consecutively to its atrophy the size of the liver has diminished. The difficulty with which injections are made to pass into the substance of the liver in such cases, the ascites which almost uniformly follows this atrophy of the red substance, whence arises a sort of ratatiné appearance of the liver, seem to prove that there then takes place obliteration of a great number of the small vessels which constitute this red substance. Oftentimes also unequal hypertrophy of some granulations, whether isolated and thinly scattered, or numerous and clustered together, coincides with perceptible diminution in the size of the liver, which depends on atrophy of other portions of the red substance, or of the white substance.

Hypertrophy of the liver, whether partial or general, is most frequently accompanied by an increase of its consistence. It may exist with different shades of colour, the principal of which are the red, yellow, greenish, brown, grey, or even white tint. Several of these tints are often blended together, from which results the most varied appearances of the liver, which I shall endeavour to point out in the particular cases.

There are instances where the liver, with respect to its form, size, colour, and the proportion of its substances, appears to be in its natural state; but its consistence is very much diminished; its tissue is extremely friable; it crumbles and is reduced to a pulp under the pressure of the finger; it sometimes possesses not more consistence than the substance resembling wine lees, which fills the areolæ of the spleen. No doubt the analogy with that which takes place in other organs, and still more the cases wherein this softening of the liver has been observed to coincide with all the symptoms of hepatitis, should incline us to admit that this softening is the result of an inflammatory process. However, convinced as I am that a great number of softenings succeed inflammation, I feel some hesitation in admitting that this is the case for all; I have not sufficient proofs to enable me to come to a final decision on this point. I ask every fair reasoning man, has he not met cases wherein a softening existing in the brain, stomach, liver, &c., he has still been unable to say that any species of sanguineous congestion, any process of irritation whatever, has preceded or accompanied the softening of which these organs were the seat? In these difficult cases let us learn to doubt and to wait.

Persons have frequently spoken of an increase in the size of the lobulus Spigelii, an increase so considerable that this lobe formed a tumour sensible to the touch. Among the numerous patients examined at the Charité and elsewhere during their life or after death, none presented this kind of alteration of the liver, which, according to several physicians, should be very common; never during life have we been able to feel the lobulus Spigelii through the abdominal parietes, and never, after death, have we ascertained its hypertrophy independent of that of the rest of the liver. We must then consider those tumours formed by the lobulus Spigelii, an occurrence as uncommon as a tumour would be, formed either by an aneurism of the cœliac trunk, or by a disease of the pancreas *.

---

* In a case of cancerous affection of the pancreas already alluded to, there was no appreciable tumour during life through the abdominal parietes.

With respect to the two principal lobes of the liver, they are often found hypertrophied or atrophied separately one from the other. The right lobe, for instance, may be much larger than ordinary, and the left lobe consist merely of a very slight appendix. At other times the right lobe is, on the contrary, diminished in size; it occupies but a small portion of its usual place, whilst the left lobe having become hypertrophied, extends much more than usual into the left hypochondrium, and may even be the cause of a dull sound on the inferior left side of the thorax. In this case the liver of the adult resembles that of the fœtus, in which the left lobe has greatly the advantage over the right in respect to size.

8. The last order of changes of the liver consists in the morbid secretions which may take place into its parenchyma. Thus, pus may infiltrate it, or an abscess may be formed in it.

Four leading circumstances may be noticed in which the liver becomes the seat of abscess. These abscesses are formed; 1st, after external violence, which acts directly on the liver; 2ndly, after traumatic lesions of the brain; 3rdly, spontaneously as a termination of acute or chronic hepatitis: this case is more uncommon than the two preceding. 4thly, Finally, there are circumstances where the pus found in the liver does not appear to be accumulated in consequence of an hepatitis; having been formed elsewhere, and carried into the torrent of the circulation, one might say that it has been merely separated from the blood in the interior of the liver. In such cases no symptom of hepatitis has existed during life: neither is any trace of inflammation, or of any morbid process whatsoever found after death around the purulent collection; very frequently also similar abscesses are found at the same time in other parts, in the lung, spleen, brain, and in the subcutaneous and intermuscular cellular tissue; and in none of these parts has the formation of pus been preceded by signs of inflammation, and lastly, this species of abscess is produced chiefly in given conditions of the system, namely, after capital operations, or puerperal metro-peritonitis, or when a profuse suppuration, which had been kept up for a long time, has been suddenly arrested. We shall cite at another time facts relative to these different species of abscess; suppuration of the liver is, moreover, a very uncommon affection.

Instead of pus, the tissue of the liver may secrete different substances, sometimes yellow and friable, sometimes more or less resembling jelly or glue. These different substances, which, in consequence of differences oftentimes of trifling importance in their physical qualities, have been called by different names, either tubercles, or encephaloid substance, or steatoma, etc., agree in the common and important character of being secreted within the substance of the parenchyma of the liver, and after sanguineous congestion more or less evident, just as pus may be secreted there. They are even formed more frequently than the latter. Sometimes the tissue of the liver is still apparent where these secretions exist; it is infiltrated with them, and at the same time more or less injected. Sometimes in order to find the tissue of the liver, it is necessary to have recourse to careful dissection or to maceration, and then we see shreds of it in the midst of foreign matter, in the same manner as in a phlegmon we find shreds of the cellular tissue and of muscle in the midst of pus. The tissue of the liver is then not merely compressed, it appears to be actually atrophied and absorbed; dissection has also convinced me of an important fact, namely, that the numerous vessels oftentimes seen to ramify in the midst of white encephaloid masses, do not in many cases belong to them; that they merely traverse them, and that they are merely a remnant of the tissue of the liver to which they belong. At a later period these vessels may burst, and the result will be hemorrhages more or less profuse.

Thus in more than one case the organisation of a great number of *accidental* productions belongs less to the latter than to the tissues within which they are developed.

CHAPTER II.

SYMPTOMS OF DISEASES OF THE LIVER.

9. These are few in number, often too obscure, or too slightly marked, to enable one always to state positively the existence of an affection of the liver. Under other circumstances this is not doubtful, but it is very difficult, or even impossible to determine its nature; for on the one hand similar symptoms are often produced by several affections of the liver, which present the greatest differences with respect to their anatomical characters; and on the other hand, it cannot be said that in any of these affections any one invariable symptom is found. Jaundice, for instance, may be absent or present in all the diseases of the liver; there is but one case in which it is never wanting, that is, when the ductus choledochus is obliterated. The object of the present chapter shall be to present certain data furnished by observation, which assist, 1st, in detecting the existence of a disease of the liver; 2ndly, in determining its nature.

10. The symptoms which manifest themselves in diseases of the liver are either local or general; there are many cases where the latter are much more marked than the former. We shall speak of both in their respective order.

ARTICLE I.

LOCAL SYMPTOMS OF DISEASES OF THE LIVER.

11. Among the local symptoms we first find pain; this is as variable in its intensity as in its seat; in some patients it is wandering, changeable, and like in this respect to a rheumatic pain; it may exist over a considerable extent of surface; thus in some individuals all the lower part of the chest on the right side, and the hypochondrium of the same side, are the seat of a painful sensation. At other times it exists only in some circumscribed points; thus it is observed, 1st, towards the epigastric region; 2nd, along the cartilaginous edges of the false ribs of the right side; 3rd, in a more or less limited point of the right hypochondrium; 4th, towards the lower and lateral part of the thorax on the right side, and sometimes over a very circumscribed extent, as, for instance, over the space occupied by the last false rib of the right side; 5th, posteriorly on this same side near the vertebral column, and if the pain is then felt a little high up, it may be readily confounded with the dorsal pains of phthisical patients; 6th, in the left hypochondrium, in the place ordinarily occupied either by the great cul-de-sac of the stomach or by the spleen; 7th, in different points of the abdomen, such as the umbilicus, the flanks, &c., if they are occupied by the liver now increased in size. There are other pains which are felt not only in parts occupied by the liver, but also in parts more or less remote; they are purely sympathetic, and are the result of mere nervous irritation. Thus we have for a long time noticed, without being able to account for it, the fixed pain in the right shoulder, which accompanies certain affections of the liver; this pain we have found to exist less frequently than has been said; however, in more than one case we have found it to exist in a very marked manner. These sympathetic pains may again be seated in other

parts. We shall always hold in recollection the case of a patient whose liver was found to contain an immense number of what are called cancerous masses. He had never complained of any pain in the region of the liver; but the two sides of the chest became from time to time the seat of a very painful sensation, which soon extended to the arms, and as far as the hand; the hand was also the seat of a very troublesome sense of formication, sometimes very acute, lancinating pains, passing like flashes of fire, off one or other of the arms. We found nothing after death which could explain these symptoms. We have seen other patients who complained only of pain in the head; this pain may even be sufficiently intense and constant to engage exclusively the attention of the patient, the affection of whose liver was not indicated to him by any local affection. Again: a very extraordinary phenomenon which some individuals present who are affected with liver disease, is an intense and very troublesome itching of the skin: this symptom principally exists when there is jaundice; but it may also exist where the skin has retained its natural colour.

The pains felt in the region of the liver, or in the place which it comes to occupy from disease, may be continued or intermittent. In both cases they are sometimes very severe, and are felt spontaneously without being increased by pressure; at other times pressure increases them; at other times again it is only when pressure is employed that any pain is felt. There are some persons who suffer only when they walk, when they are in a vehicle, or when they ascend or descend along an inclined plane, or when they lie on either side.

A fixed pain in the region of the liver is often the first symptom which excites suspicion that this organ is diseased. Some persons have felt for a great number of years no other symptom with respect to the liver, except a more or less acute pain which returns at intervals; their complexion was at most a little yellow; in other respects the region of the liver was soft, digestion generally good, and the function of nutrition went on rather satisfactorily; but a period comes when the old pain becomes more acute at intervals; and when it is thus awakened with unusual severity, fever sets in, traces of jaundice often manifest themselves; at a later period these intermittent symptoms become continued, and the existence of a severe disease of the liver is no longer doubtful. We have already spoken of those cases wherein the pain forms so predominant a symptom, as to form a separate disease under the name of hepatic colic. In other individuals the pain does not supervene till a long time after other local or general symptoms have already announced the existence of an affection of the liver. Oftentimes again this affection runs through all its stages, and carries the patient to the grave, without any pain having ever been felt in the hepatic region.

Several parts situate in the vicinity of the liver may be the seat of different pains which have been often confounded with pains of the liver; and it must be acknowledged that it is often difficult to avoid such a mistake. Those parts, the pains of which simulate those of the liver, may be situated either in the thorax, or in the abdomen. In the thorax we find certain inflammations of the pleura, and particularly of the diaphragmatic pleura, which indicate their existence by a pain seated entirely in the inferior part of the right side of the thorax, along the cartilaginous edges of the ribs, and as far as the right hypochondrium. One may then feel disposed the more readily to believe in the existence of hepatitis, because jaundice is observed to supervene, which is probably the result of a sympathetic irritation, communicated from the diaphragmatic pleura to the convex surface of the liver. We certainly have in such cases found an inflammation in the pleura, and no appreciable alteration in the organ which secretes the bile.

In the abdomen a partial peritonitis occurring in the vicinity of the liver, an acute or chronic inflammation of the pylorus, or of the commencement of the duodenum, a nephritis even, or tumours developed between the liver and kidney or beneath the gastro-hepatic epiploon, may give rise to pain which it would often be difficult to distinguish from pain seated in the liver.

From the existence of pain, its seat, nature, severity, and the time of its appearance, can we discover on what species of affection of the liver it depends? This has been several times attempted, but in most cases the rules laid down on this point may be overturned by exceptions almost as numerous. Thus it has been said that what are called cancerous affections of the liver are accompanied with acute, lancinating pains, considered to be very characteristic; and yet on perusing our observations on this head we find, on the one hand, that these pains have been observed in persons who had other affections of the liver, and on the other hand, we find that persons labouring under cancers of the liver, with very little or no pain, are almost as numerous as those who have felt acute pain.

It is not uncommon to find after death cellular adhesions more or less numerous uniting the liver either to the diaphragm, or to the abdominal parietes. With these adhesions we think we may connect those pains, whether acute, slight, continued, or intermittent, which some individuals complain of in the right hypochondrium. These pains, every time they become exasperated, are often accompanied by marked disturbance in the functions of the liver, without the latter being itself diseased.

Extremely acute pains are sometimes felt in the hepatic region, which cannot be accounted for after death by any lesion of the liver, or of its excretory ducts. This is the case of certain hepatic colics. This single circumstance, and still further, the character of these pains, their intermittent nature, the good state of health which often exists in the intervals between them, induce us to think that these pains principally have their seat in the numerous nervous filaments distributed to the liver, which arise from the pneumo-gastric nerve, or from the great sympathetic. We have additional proof that these pains belong to the liver, because they are often accompanied with jaundice, which disappears with them, or which may continue a longer or shorter time after them. There is nothing astonishing in this case in the affection thus modifying the biliary secretion, as we know the nervous influence evidently modifies many other secretions, as that of the tears, of the saliva, the urine, etc. Tic-douloureux is also accompanied with a vitiated secretion of the buccal glands.

3°. There are some diseases of the liver, which *most ordinarily* produce but very dull pain, or no pain at all, as in several of its chronic affections; the development of hydatids in its substance, its fatty degeneration, its induration, its different species of general or partial hypertrophy (granulations, cirrhosis, etc.) in a word, its atrophy, which also may be general or partial. In this latter affection where the liver forms no tumour, it may be anticipated how obscure the diagnosis must be in consequence of the absence of pain. Thus it can only be conjectured from the existence of some general symptoms to be spoken of hereafter. It must not, however, be forgotten, that in several cases where the affection has become completely free from pain, when it is observed, there was a period, towards the onset of the disease, where pains more or less acute existed.

12. The modifications which the liver often presents with respect to size may be detected during life, if there be an increase in this size; and sometimes also when it is diminished, this diminution of size may be detected: 1st, by examining the form of the abdomen, and of the lower part of the chest on the right side; 2ndly, by the touch; 3rdly, by percussion.

There are some cases wherein the eye can detect the existence of a tumour in the right hypochondrium; the abdominal parietes are raised by it, and we may sometimes distinctly trace the thin edge of the liver through these parietes; this organ sometimes becomes very manifest after the operation of paracentesis. The eye itself is then sufficient to detect the existence of disease of the liver. In other cases the signs are not so well marked. By the eye we can only detect the existence of a tumour in either of the hypochondria, or in the epigastrium. But other signs are necessary in order to arrive at a knowledge of the nature of this tumour. In some patients the portion of this viscus concealed behind the ribs may have increased in size so as to throw them out, particularly at their cartilaginous portion, and thus produce a singular deformity in the inferior and right side of the chest. We then observe the anterior surface of the last ribs and of their cartilages become superior, their upper edge become posterior, etc. The last rib being pushed out becomes very perceptible to the eye.

The *touch* yields more and more varied information than that obtained by the eye. In several persons labouring under affections of the liver, with increase in the size of this organ, nothing else is ascertained on feeling the abdomen, but unequal resistance on pressing on both sides of the linea alba. Thus, whilst the abdominal parietes in the left hypochondrium may be readily depressed, and the hand plunges to a considerable depth without meeting any obstacle, in the right hypochondrium, on the contrary, the abdominal parietes are tense, as if a solid body situate behind them prevented them from yielding to the depressing power of the hand. There are many cases of disease of the liver where this inequality of softness in the two hypochondria is the only sign of the tumefaction of this organ.

At other times it happens that, in the right hypochondrium, we can circumscribe a body which is prolonged behind the ribs, and which, by its form and its situation, seems to be the liver in a state of enlargement. But in order to ascertain it fully, the manner of practising the touch is not indifferent. It is sometimes sufficient merely to apply the hand over the hypochondrium, and to press it regularly from before backwards in its different points; then by way of comparison, to examine by the touch the other parts of the abdomen, and always after the same manner. It is likewise necessary to employ the examination by the hand, the patient being placed in different positions, either lying on his back, or on either side, sitting down, or standing up. Oftentimes in thus examining with the hand the tumour whose presence is detected cannot be circumscribed, its limits being undefined. Another process must then be employed. Carry the hand over the hypochondrium, so placing it, that all the fingers being extended and approximated to one another, with the exception of the thumb, the entire external edge of the index finger may touch the abdominal parietes. Press the hand in this precise direction from before backwards; then carry it quickly from below upwards, bringing its ulnar edge close to the parietes of the abdomen, and constantly pressing with its radial edge in this new direction. By proceeding in this way we may often succeed in circumscribing accurately the thin edge of the liver. Sometimes, again, this organ presents over its entire extent as far as is perceptible to the touch a smooth, uniform surface; sometimes abnormal elevations are detected in it; whilst sometimes it presents points where it is really depressed, and as it were excavated; it would appear that in these points it has undergone a loss of substance.

It is not in the right hypochondrium only that the liver may be felt by the touch; there are scarcely any points of the abdomen where its existence may not be detected by these means. First, it may be felt simultaneously in the right hypochondrium, in the epigastrium, and in the left hypochondrium. The diagnosis then presents but few difficulties; in fact we feel, and sometimes see, the tumour come out, in a manner, from behind the ribs on the right side, and extend from thence over the points now mentioned. It may be limited to the epigastrium, or advance more or less into the left hypochondrium; more than once have we traced its course thus from right to left. The hepatic tumour, having once reached the splenic portion of the abdomen, may terminate there in different ways, either by forming there a sort of rounded mass, the limits of which are not readily found, or by forming a sort of tongue with thin edges, which may still be felt through the abdominal parietes.

The diagnosis becomes more difficult, when the tumour formed by the liver does not exist in the right hypochondrium, being confined to the epigastrium or left hypochondrium. This occurs when the liver is unequally enlarged, and when the left lobe is in a state of hypertrophy, in which the right lobe does not participate. In the former case it may be taken for a tumour of the stomach, and in the latter either for the same, or for a tumour of the spleen. But by attention and practice one generally succeeds in distinguishing these different cases. For tumours formed by the stomach very rarely extend behind the ribs; they are in general more or less moveable. The epigastric tumours which are formed by the liver may be almost always traced behind the ribs; they are limited exactly to the left hypochondrium, whilst on the right they are felt to disappear imperceptibly, and without its being possible to say where they terminate. They are in general much less moveable than tumours of the stomach. This state of the digestive functions may also serve to throw light on the diagnosis, but yet only in a secondary way; for in several chronic affections of the liver, there exists at the same time gastritis, and, still further, the liver may, by its mere presence in the epigastrium, compress the stomach, and embarrass its functions. With respect to tumours formed by the spleen, their direction which is ordinarily oblique from above downwards, and from left to right, and the point from which they commence, may distinguish them in most cases from tumours of the left hypochondrium formed by the left lobe of the liver.

The liver may occupy other points of the abdomen, and be detected there by manual examinations. It has been seen to occupy the umbilical region, the flanks, to touch the crest of the ileum, to descend even nearly as far as the pubes, and to occupy, in a word, almost the entire abdomen. The cases wherein it is separated only one or two fingers' breath from the crest of the right ileum are not very uncommon; those wherein it advances towards the hypogastrium are much less common.

Two principal circumstances prevent us in a considerable number of cases from feeling the tumour formed by the liver in one of the points just mentioned. The first of these circumstances is the presence of a considerable liquid effusion in the peritoneum; the second is the distension of the large intestine, either by fæces or by gases. This distension ceasing by stools natural or artificially brought on, we begin distinctly to feel a tumour, which till then had been imperceptible, or which at least could have been but barely suspected.

The liver may form a tumour, either in the epigastrium, or in either of the hypochondria, without being really increased in size. This happens when an effusion formed in the right pleura is large enough to press the diaphragm downwards, and at the same time the liver, which then forms a greater or less projection below the ribs. This also happens when a tumour developed in the abdomen, near the liver, and formed either at the expense of the organs, or at the expense of the portions of the peritoneum which separate them, comes to occupy the place usually occupied by the liver. In one case, for instance, an encysted tumour developed between the kidney and the liver, had caused the latter organ to undergo a sort of oscillating movement, in consequence of which the liver pushed from the right hypochondrium, and inclining from above downwards, from right to left, and from behind forwards, formed during life a considerable projection in the left hypochondrium. It was clearly discovered that the tumour was formed by the left lobe of the liver; and further, it was natural to think that this lobe formed this considerable projection only because its volume was actually increased. This however was not the case, as the post-mortem examination proved.

Not only may tumours of the stomach, spleen, peri-hepatic peritoneum, and gastro-hepatic epiploon sometimes be mistaken for tumours connected with the liver; but there are even cases where organs situate at a very great distance from the liver in their normal state may, on becoming swollen and enlarged, approach the hypochondria, occupy them, and there form tumours which appear to depend on the liver.

In a woman labouring under encysted dropsy of the ovary, the tumour was disposed in the following manner: in the iliac region of the right side we felt a hard, uneven, bossilated body; we traced it obliquely from below upwards, and from right to left, to near the umbilicus, where it ceased to be perceptible. Above the umbilicus the abdomen presented its natural softness. But over the extent of some fingers' breadth, below the cartilaginous edge of the ribs of the left side, a second tumour existed, formed by a body which appeared to be irregularly rounded, without any inequalities on its surface. This body appeared to extend behind the ribs. In its form, situation, and relations, it closely resembled the left lobe of the liver unnaturally enlarged. And such was the diagnosis given on the case, some time after the patient's admission into the hospital. The lower tumour having very much increased, and its nature not appearing doubtful, the operation of paracentesis was performed, in which the interior of the tumour was penetrated, which had been considered as encysted dropsy of the ovary. A great quantity of liquid flowed out; the tumour of the iliac region subsided; and at the same time, what was remarkable, the tumour of the left hypochondrium, which appeared to have no connexion with the lower one, changed its position, and descended to the level of the umbilicus. From henceforward it ceased to be considered as appertaining to the liver; it now appeared to be merely a connexion of the tumour of the iliac region, and, like it, to appertain to the dropsy of the ovary, of which it seemed to form the seat. But in this case why had it occupied till then the left hypochondrium, and why had it suddenly changed its position after being punctured? This might be explained. It might be supposed, in fact, that before this operation the superior part of the tumour of the ovary was kept elevated, and as it were supported, in one of the hypochondria by the inferior portion, which was distended with a great quantity of liquid; the latter having been let out, the tumour of the hypochondrium must necessarily change its place. The patient died, and an opportunity was afforded of verifying the diagnosis: the following lesions were found at the post-mortem examination:—

The peritoneum of the abdominal parietes was found united to that covering the viscera by very close adhesions; immediately behind these parietes an enormous tumour was found, which filled the hypogastrium, umbilicus, the two iliac regions, and the two flanks, the entire of the left hypochondrium, which it occupied as far as the level of the fifth rib, and a part of the epigastrium and right hypochondrium; it pressed the liver up very much, which ascended as far as the fourth rib, and the stomach which was found on a level with this viscus. Before it the scirrhous epiploon was extended; in the left flank the descending colon was perceived, and some convolutions of the small intestine, the principal part of which was concealed by the tumour. It was easily detached from the parts in connexion with it, and to which it was united only by cellular adhesions. Inferiorly it was connected with the uterus by the right Fallopian tube, and the ovarian ligament of the same side. No trace of the right ovary could be found: the left was intact. It presented as it were three distinct parts; one situate in the left hypochondrium, and in the epigastrium, seemed to be formed of a hard and solid tissue; the other, situate in the flank and right iliac fossa, presented the same appearance. Lastly, the portion which occupied the umbilicus and hypogastrium, and which connected the two preceding, was soft and of a shining appearance, and seemed to consist of a pouch full of liquid; on making an incision into this third portion, a great quantity of a greyish purulent liquid was observed to escape. The cavity containing it might contain at least the head of a fœtus. On the inner surface of its parietes there existed from eight to ten tumours, which were on an average the size of an orange. When cut into they all presented a similar tissue—namely, myriads of fine filaments, of a red or white colour, which crossed each other in a thousand different directions, leaving between them areolæ filled with a liquid which was colourless in some, red or brownish in others, and very much resembling in consistence and tenacity the mucus of the nasal fossæ. The largest of the areolæ might hold a small filbert; the smallest could scarcely contain the head of a moderate sized pin. It would be difficult, I think, to refer this tissue to any of those hitherto described. In some parts it resembled softened scirrhus, in others accidental erectile tissue; the latter parts were very like a portion of spleen emptied of blood and subjected to repeated washing. The other parts of the tumour consisted of a similar tissue. It was enveloped through its entire extent by a thick, evidently fibrous membrane. Its external surface was covered by the peritoneum; its internal surface, when examined in the great pouch, was wrinkled, of a red colour like wine lees, lined with an albuminous membraniform layer, resembling that which lines the parietes of pulmonary caverns. It presented, moreover, a considerable number of small white granulations, about the size of a grain of millet, which resembled very much the granulations raised on the internal surface of several hydatids known by the name of acephalo-cysts.

This membrane might be easily divided into a great number of laminæ placed one over the other. In some points the innermost laminæ presented a deep black colour, under the form of broad patches or long striæ.

The great epiploon, as also the mesentery, were transformed into thick cancerous masses; when cut into, they presented in several points a white, opaque tissue traversed by numerous red lines (encephaloid tissue in the state of crudity.) In other points nothing was found but a sort of reddish detritus, and even red sanguineous effusions (softened encephaloid tissue.) In other parts, with the white and hard tissue now described, a yellowish and friable tissue was mixed, which readily crumbled under the finger, like sulphate of lime saturated with water (tuberculous matter.)

The interior of the liver presented three or four cancerous masses formed by the encephaloid tissue still crude, being each nearly the size of a filbert. The lungs on either side descended only as far as the level of the fourth rib. The heart was healthy, and was filled with liquid black blood.

13. If, after having passed in review the different varieties of tumours perceptible to the touch which the liver may present, we set about enquiring what are the diseases of the liver in which these tumours are chiefly observed, we shall not be able to lay down any constant rule on this point. On the one hand, there is scarcely any one in which the form of the liver may not be modified, so as to give rise to a tumour discoverable during life; and on the other hand, all the affections of the liver may arise, become developed, run through their different stages, without the organ increasing sufficiently to form a tumour.

In the cases of simple sanguineous congestion, whether active and produced by a vital stimulus, or connected with a mechanical obstacle to the circulation, the liver may be so tumefied as to be felt in the hypochondrium and epigastrium. This tumefaction is sometimes very rapid; oftentimes also it is observed to disappear with as much rapidity as it had formed, either spontaneously, or after bloodletting carried to a greater or less extent. There are some patients in whom the right hypochondrium becomes thus tumefied, it then resumes its natural softness, and this occurs several times. Such intermittent tumefactions of the liver are principally observed during the course of certain organic affections of the heart. In most cases they are not accompanied with any other disturbance of the functions of the liver; there is neither any pain observed, nor trace of jaundice. Sometimes, however, the patients complain of a painful sensation, a sort of weight towards the hypochondrium, and a slight yellow tint is spread over the skin. After having thus appeared and disappeared several times, the tumefaction of the liver may remain permanent, and that, which at first was but a temporary sanguineous congestion, may become imperceptibly a serious alteration of texture.

It would be very difficult, in my opinion, to draw an exact line of demarcation in the liver, as in every other organ, between the highest degree of simple active congestion and inflammation properly so called. The latter may exist either in the acute, or in the chronic state, without producing any kind of tumour, and if, at the same time, no pain exists, the diagnosis will be very obscure. But in a great number of cases, acute hepatitis brings on tumefaction of the liver, and the latter may then be felt in the hypochondrium. This tumefaction may exist, and be formed very rapidly with or without pain, with or without jaundice. Sometimes it lasts only a few days, and disappears ; in other cases it lasts for several weeks, and even for several months, and then disappears. It must be admitted that in such cases there was only engorgment of the liver, without any real alteration of its nutrition. This tumefaction, by inflammatory engorgement of the organ, may be formed rapidly, and may then have remained stationary, or else it is developed only in an imperceptible manner. In the former case the hepatitis, acute at its onset, passes only secondarily into the chronic state ; in the second case it is primarily chronic. These different engorgements of the liver deserve attention so much the more, as they are unquestionably the very commencement of a considerable number of its organic affections, whether hypertrophy and induration of its substance, or cancerous degeneration, etc. It is these sanguineous congestions, acute or chronic, without any other alteration, which may be combated with advantage by different therapeutic means, whilst these same means appear to be generally ineffectual in treating most of the alterations of texture, of which inflammatory engorgement of the liver has also been the commencement. It is from not having sufficiently distinguished these different cases that the same remedies employed successfully for the purpose of removing several tumours of the liver, have completely failed in other cases which were apparently identical.

In these cases of simple engorgment* of the liver, the tumour which it forms presents a smooth surface, without projections or depressions. The same may happen with different alterations of texture. But further, in this latter case, another matter is often observed. Thus, in the case where the tissue of the liver is indurated, it often presents on its surface numerous inequalities, which arise from its not being equally hypertrophied in all its points. When cancerous masses are developed in the hepatic parenchyma, manual examination detects, more frequently than in any other affection of the liver, numerous knobs which raise the abdominal parietes. But what is very remarkable, it happens occasionally that after a longer or shorter time these knobs disappear, the place which they occupied becomes actually a cavity, and instead of an elevation, examination by the touch detects a depression. This indicates that the disease is taking a fatal course ; where a projection is found which has succeeded to an elevation, we may be satisfied that a cancerous mass has undergone considerable softening.

Immense abscesses may form in the liver, without their being accompanied with any tumefaction of the organ perceptible to the touch. At other times, there may exist a tumour in the hypochondrium, but this tumour presents no other characters than those which belong to simple sanguineous engorgement of the liver. This I believe to be the most common case. Under other circumstances the abscess being situated very superficially has for its parietes anteriorly merely a very thin layer of the substance of the liver, which is in immediate contact with the abdominal parietes. Then by pressure judiciously made we may detect behind these parietes the existence of a cavity full of liquid; around this there is often felt a hard body, which is nothing but the portion of parenchyma surrounding the abscess.

---

* The structure of the liver, such as has been described, accounts for the readiness with which these engorgements may take place, and also for their frequency ; it also accounts for the rapid increase in size which the organ may take on.

The hydatids developed in the liver are contained there in a sac with fibrous parietes, which often forms a prominence on the exterior of the organ, and which may be detected by the touch. The tumour resulting from this usually raises a point of the abdominal parietes, and is perceptible to the eye. If we examine it with the hand, or press it in different directions, we are struck with its extreme resistance, and its great elasticity; this is conformable with its anatomical structure. These external characters seem to me so marked, that they may cause it to be considered at least as very probable, that the tumour perceptible to the sight and touch in the right hypochondrium, and which seems to be continued behind the ribs, is owing to the development of an hydatiferous sac. This species of tumour, when it is exempt from all complication, may exist for a long time without producing pain, or interfering considerably with the functions of the liver; without occasioning any sympathetic disturbance in the system, lighting up fever, or at all changing the general functions of nutrition. These circumstances may also serve to throw light on the diagnosis.

I have observed a remarkable termination of these tumours in the Charité; namely, the change of the hydatiferous sac into a purulent deposition (foyer.) The patient had presented for a long time near the epigastrium, immediately beneath the cartilaginous edge of the right ribs, a round tumour, extremely elastic, about the size of an orange, without pain, or change of colour in the skin, the general health being still preserved. This tumour appeared to us to be a sac of hydatids. After some time it became the seat of a pain at first not very acute, which subsequently became lancinating at intervals; the features became changed, fever set in, considerable emaciation took place after a little time, profuse diarrhœa supervened, but a considerable time after the appearance of the different symptoms now described, and ultimately the patient died.

On opening the body we found on the upper surface of the left lobe of the liver a tumour corresponding to the point where it had been felt during life through the abdominal parietes. This tumour having been cut into, a great quantity of greenish, inodorous pus flowed from it, in the midst of which burst and torn hydatids were observed to float. Almost the entire left lobe of the liver was taken up by an enormous cavity, in which were contained the pus and hydatids which had escaped on making the incision.

We thought it should be admitted that the tumour appreciable during life had at first consisted of a simple sac of hydatids; this sac subsequently became inflamed, its internal surface, instead of exhaling serum, had secreted pus, and then only that group of alarming symptoms appeared, in the midst of which the patient died. The state of the hydatids was remarkable. It is probable that they had ceased to live, when the pus began to surround them. Another time I found the debris of hydatids in the midst of an encysted abscess of the peritoneum; and now that I am on this subject I recollect that in the third part of this work I cited cases, where tuberculous matter had been deposited around hydatids, and had by little and little taken possession of the cavity primarily occupied by these animals.

Other tumours occupying the left hypochondrium depend on different alterations of the gall bladder; we shall consider them in another place.

6. Percussion of the inferior and right side of the chest must not be neglected among the means to be employed for ascertaining the size of the liver. There are cases where, at the same time that this organ forms a tumour in the right hypochondrium, in the epigastrium, or in other points of the abdomen, it forcibly presses up the diaphragm, ascends higher than usual into the thoracic cavity, comes into closer apposition with the ribs, and no longer allows the lungs to

become interposed between it and them. Then the sound of the thoracic parietes, over all their lower and right portion, is more completely dull, and more extensively so than usual; sometimes even the left lobe of the liver becoming more developed, comes to apply itself to the last ribs of the left side, and there produces a sound similar to that frequently produced by the enlarged spleen in this same part. It must not be forgotten that the liver may thus be considerably enlarged, either upwards, towards the chest, or laterally in its left portion, without passing the edges of the ribs, so that then the increase of the dull sound in the points just mentioned is the only circumstance which can detect the increase in the size of the liver.

At other times, on the contrary, the sound of the lower part of the thorax on the right side is clearer than usual. This happens in cases where there is diminution in the size of the liver, and this sort of information is not to be neglected, when other signs incline us to suspect the existence of such a lesion.

7. It would seem that the liquid secreted by the liver should be changed when there is lesion of this organ. However, this is not always the case. There are some cases where the liver having been for a considerable time seriously diseased, the bile does not present either in quantity or quality any modification appreciable at least by our senses. On the other hand we sometimes find the bile perceptibly changed, though the lesion of the liver which has occasioned it entirely escape us. Oftentimes, for instance, I have met in the gall-bladder nothing but an aqueous or albuminous liquid, with a slight yellowish tint; the inner surface of the biliary ducts was not of a yellow tinge as usual, they contained a little liquid like that of the gall-bladder. I found this state of the bile in the three following cases:—1st, when there was fatty degeneration of the liver, as if the secretion of bile was then succeeded by the secretion of fatty matter; 2nd, in some cases of atrophy of the liver carried to an extreme degree; 3rd, in some other cases where there was hypertrophy, induration of the hepatic parenchyma, a development of cirrhosis or of red granulations. It is probable that in these different kinds of organic lesions the anatomical element engaged in the secretion of bile becomes involved. The bile seems to me to deviate much less frequently from its natural state, at least to all appearance, in those cases where accidental productions—as pus, cancer, tubercle, hydatids—existed in the liver, than in cases even where these productions occupied more than half, and even three-fourths of the entire substance of the liver. On the contrary, in several individuals who died of different acute or chronic diseases unconnected with the biliary apparatus, and whose liver seemed to be in the normal state, I have found this same serous bile both in the gall-bladder and in the principal ducts; it seemed to consist merely of water, albumen, and a small quantity of yellow colouring matter. The knowledge of these facts I consider not devoid of importance. It tends to confirm an opinion which in England more particularly has at the present day numerous partisans, and according to which a great number of derangements of digestion are considered as depending on a vitiated secretion of bile. It is because the latter, they say, no longer flows into the duodenum, or enters it in a very altered state, that several individuals experience—1st, a change in the number and qualities of the stools, which are scanty, devoid of colour, of too great consistence, etc.; 2nd, probably imperfect chylification, and consequently bad nutrition, marasmus, etc. This opinion, I think, can no longer be regarded as a mere hypothesis, the moment it is proved that in a certain number of cases the bile is really changed in its qualities. Now this follows from the facts just cited. But this almost total change of the bile into water and albumen is not probably the only alteration which it may undergo, it is only the most obvious. This is at least certain, that in dead bodies we find the greatest differences in the appearance of the bile of the gall-bladder, with respect to its colour, which varies from a bright yellow to the deepest black, with respect to its consistence, which presents so many degrees,

from that wherein it flows like water, to that where it is like very thick syrup, and in which at length it becomes solidified. There are some species of bile, which, when brought into contact with the skin, excite in it a disagreeable sensation of acrid heat; we may here recollect the experiments of Morgagni, who having placed some bile collected from different bodies in the cellular tissue of several animals, found that in some cases it acted merely as a foreign body where it was deposited, and that no bad consequence resulted from its absorption, whilst in other cases it produced an extremely deleterious effect. It would be well that these experiments were repeated and followed up. We know so little as to how the bile acts in aiding the process of digestion, that it is impossible for us to foresee what sort of influence a change in the qualities of the bile, in the proportions or nature of its elements, can produce in the latter function. A modification which appears to us very considerable has probably but little influence; another which appears to us less important, is probably of much greater importance in perfecting the process of digestion.

These facts being laid down, is it in the power of art to restore the secretion of bile to its perfect state; and for this purpose what means are to be employed? It should be remarked, that in many cases where the appearance of the bile found in the dead body no longer seems to be natural, the liver itself is exempt from all appreciable change; it seems merely that in consequence of some latent change in its vital properties, or in its molecular structure, it has lost the power of separating from the blood the elements of the bile in their ordinary proportions. English physicians say that they restore this power to the liver, and consequently that they re-establish the course of the bile, 1st, by irritating the intestinal mucous membrane by suitable purgatives; 2dly, by the use of calomel, which, according to them, exercises a specific action on the secretion of the liver. In this way, they say, they bring about regularity in the alvine evacuations, they restore depraved digestion, bring back health and flesh to the patient, etc. Thus these same functional disturbances, which, in the school of M. Broussais, are considered as the result of different shades of gastro-enteritis, are elsewhere looked on as connected with a vitiated secretion of bile; they are treated with advantage, they say, by means which should necessarily aggravate the gastro-enteritis, if it did exist. The conviction of English physicians, with respect to the soundness of their theory and the efficacy of their practise, is so strong, that in my opinion every reasonable mind has some grounds for doubt, and consequently for examination on this point. If any one should wish to solve this question before having experimented, he would, I think, find himself very much embarrassed. And with respect to theory, that of the physicians of Great Britain rests on physiological ideas as sound and as defensible as the theory put forward by M. Broussais. With respect to pathological anatomy, it cannot afford any solution of the question; for it points out very perceptible alterations in the qualities of the bile as clearly as it detects intestinal inflammations. Shall we calculate, in fine, the success of the two therapeutic methods? the difficulty will only be increased: for in England as many books have been written, as many cases have been cited, in favour of calomel, and of different purgatives for the removal of derangements of the digestive functions, as there have been facts published in France in favour of the employment of antiphlogistics under the same circumstances. In my own opinion, I think if we were to institute an experimental study of these two methods, for the purpose of comparing them, we should arrive at this conclusion, that each may be, and must be, employed according to the nature of the case. I can positively state on this subject that I have often seen the employment of purgatives rapidly remove certain disturbances of digestion, characterised particularly by anorexia or great irregularity of the appetite, by a sense of weight in the abdomen, which continued for a considerable time after taking food into the stomach, by troublesome borborygmi, by alvine evacuations alternately too frequent and too few. There was at the same time an habitual feeling of general distress, a state of physical and moral languor, yellowness of the face, dulness of the eyes, and foul tongue. The cases of this kind, where I saw purgatives succeed, are too numerous for me to consider them as exceptions. In fact, the utility of purgatives appears to me satisfactorily proved in certain morbid states of the digestive passages, which, for that very reason, I do think should not be referred to an inflammatory state. In theory, the advantages of such treatment might be accounted for by a vitiated secretion either of bile or of intestinal mucus. No doubt there is then some alteration in the secreting organ. But when it is affirmed that this alteration is necessarily an irritation, is not that going beyond the strict observation of facts ?

The modifications in the qualities of the bile now under consideration are not the only alterations of this liquid which I have discovered in the dead body. One circumstance has struck me particularly in a considerable number of autopsies ; that is, the prodigious quantity of bile which fills the intestinal canal in some individuals who during life had profuse diarrhœa. With respect to the liver it presents no appreciable alteration, only it is gorged with bile. The intestinal canal is sometimes seriously affected, its mucous membrane is inflamed, and ulcerated ; sometimes, on the contrary, it presents no other appreciable lesion except slight injection of the vessels which pass over the mucous membrane or beneath it ; so that if, in the first case, it may be said, with M. Broussais, that the bilious flux has been consecutive on intestinal irritation, this connexion is no longer equally manifest in the second case. If an appeal be made to individual sensibility—if it be said that the irritation primarily fixed on the intestine has disappeared from the latter, and passed by metastasis to the liver, in my opinion that is but evading the objection by an hypothesis ; and, besides, might it not as well be maintained that the vascular injection, found in some points of the intestines, far from being a trace of a primary inflammation which occasioned the flux, is, on the contrary, an effect of the latter ? Is it not, in fact, very possible that the excessive quantity of bile, which in a given time is brought in contact with the intestinal mucous membrane, becomes a source of irritation to this membrane ? There is no doubt but that a moderate excitement of the digestive canal—such as that, for instance, produced by a mild purgative—is oftentimes sufficient to occasion a very copious flow of bile. Might not this effect, which is often occasioned by purgatives, become of great advantage in certain morbid states of the system ? If we see several diseases become resolved at the same time that a fluxion is set up on the skin, on the kidneys, or on the salivary glands, why might not this same process, when set up on the liver, also possess its advantages in certain cases ? Why might it not be excited artificially, as perspiration, the urine, and salivation are excited ?

16. Whether the bile continues to flow into the intestine, or ceases to do so, we observe in a considerable number of liver affections, and even in certain cases where no real disease of this organ is discovered, the different internal and external tissues assume a yellow colour, which presents different shades ; the result of this is jaundice, a disease, the nature and causes of which appear to me to be still very obscure ; the following facts and remarks will probably not be devoid of utility in throwing some light on its history. Let us first ascertain the state of the liver in jaundice.

There is in the biliary apparatus but one lesion uniformly connected with the existence of jaundice, namely, obstruction of the ductus hepaticus or choledochus. I merely refer to it here, before I point out its causes and principal varieties.

At other times the biliary ducts are found quite free after death ; and, during life, the nature of the stools did not admit of a doubt but they were equally free. However, there is jaundice, and to account for it we find different affections of the liver. But here we can no longer lay down a constant rule, as in the preceding case. For, 1st, all may be equally accompanied with jaundice, whether simple sanguineous engorgement of the liver, or the different degrees of hypertrophy and atrophy of its two substances, or of only one of them, or its softness, or its induration, or its suppuration, or its cancerous or tuberculous degeneration, etc. ; 2ndly, it cannot be said that one of these affections coincides more frequently with jaundice than the others ; 3rdly, they have all been seen to exist without jaundice. The latter, therefore, is not the necessary consequence of any of them ; other conditions are necessary in order that it may appear.

In some icteric patients the liver and its appendages are exempt from all appreciable alterations ; but lesions are found in organs whose irritation might extend to the liver, either by continuity or contiguity of tissue, or by sympathy. I have ascertained the existence chiefly of the three following lesions : 1st, of acute or chronic duodenitis in different degrees ; 2nd, of inflammation of the diaphragmatic pleura of the right side ; 3rd, of inflammation of the brain or of its membranes. This third species of lesion coincides much more rarely than the two former.

Lastly, in several cases of jaundice no alteration is found either in the liver, or in its appendages, or in the organs, which, by their situation or their nature, are capable of exercising any influence on the hepatic system. Among the individuals who were in this case, there were some in whom the primary disease had been jaundice. They had become yellow without having experienced any other morbid symptom. This yellowness lasted in them from eight days to a month, when another disease suddenly carried them off. I have seen three cases of this kind ; in the first death was the result of cerebral hemorrhage ; in the second, it was owing to super-acute peritonitis ; and, in the third, death took place suddenly, without the *post-mortem* examination presenting any lesion which could account for it. In two of these cases the total absence of colour in the stools showed that the bile no longer reached the duodenum ; in the third case, the alvine evacuations were constantly yellow.

If we now inquire into the circumstances amidst which we observe jaundice to appear during life, and which may have some influence on its production, we shall find principally the following :

1st. Several acute or chronic affections of the liver, indicated by different orders of symptoms ; sometimes jaundice prevails for the entire duration of these affections, sometimes it accompanies only one of the stages of their existence.

2ndly. An acute or chronic gastro-enteritis.

3rdly. No previous disease whatever ; but a strong mental emotion, a great fright, a violent fit of anger, etc. The appearance of jaundice is then often instantaneous. What is the cause of it then? has the mental emotion occasioned duodenitis? that, to say the least of it, is extremely doubtful ; and I should rather feel inclined to admit that the cause of jaundice should then be placed in the nervous plexus, so remarkable both for its size and for its double origin in the nervous centres of animal and organic life, which enters into the liver with the vessels, and with them is distributed through the organ. Who knows whether the sudden modification which this plexus may undergo in its functions, after a mental impression, may not have a powerful influence on the secretion of bile? Let us consult analogy, and it will lead us to an affirmative solution of this question. We every where see these same moral impressions change and modify the secretions, sometimes increase them, and sometimes diminish them or suspend them altogether. We may here refer to the influence of different species of emotions on the secretion of tears, of the perspiration, etc.

4thly. Some persons, in the enjoyment of good health, are suddenly seized with an acute, lancinating pain, intolerably severe, continued, or returning at intervals, seated in the right hypochondrium near the epigastrium. After this pain, they are attacked with jaundice, which lasts for a longer or shorter time, then disappears till a new pain brings on a new attack of jaundice. I think that, in some cases, the cause of this pain, and of the subsequent jaundice, has been rightly referred to a calculous concretion in the biliary passages. But is that the only cause of it? In some persons the jaundice has disappeared with the pain, without their having ever passed a stone. To be sure it might be said that then the concretion produced the pain and jaundice merely by its presence in the hepatic duct, and that these two symptoms ceased in consequence of the passage of the calculus into the cystic duct, and thence into the gall-bladder; but then it should be found in the latter. Now, in an individual whose body I opened, who, a little time before his death, had complained of a very acute pain in the region of the liver with this jaundice, and in whom this jaundice continued even when he died, I found no trace of calculus either in the biliary ducts, or in the gall-bladder; this person also laboured under aneurism of the heart. It may further be observed, that very often very large calculi are found in the biliary passages, without their ever having occasioned any considerable pain; and that many persons have passed a great number of them, without having ever experienced any thing like those acute, violent pains, which resemble a neuralgia with respect to their mode of appearance, their returns, their nature, and their intensity: I would accordingly feel inclined to think that one of the varieties, at least, of the affection designated *hepatic colic*, is nothing but neuralgia seated in the hepatic plexus.

One of its most remarkable effects should be to modify, or, more properly speaking, to suspend the secretion of bile, so as to produce jaundice. What is there surprising in this, if this same effect is produced by a mere mental emotion? Is it not in a similar manner to the suspension of the secretion of the intestinal mucus, that the painful constipation of lead colic seems to be owing, which also appears to be a neuralgia, seated in another portion of the plexuses of the great sympathetic? Do we not also see the most remarkable modifications in the secretion of the tears, and of the nasal mucus, accompany different neuralgias of the face? Again, among the proofs of the nervous influence over the secretions, do we not know that in animals, in whom the nerves of the fifth pair no longer communicate with the encephalon, the surface of the eye and nostrils are remarkably dry? If all these facts prove beyond doubt, that under the vitiated influence of the nervous system, most of the secretions are sensibly modified, it must be granted that the same may happen with respect to the liver; and if, on the one hand, the symptoms observed during life resemble those of the neuralgic affections, of which other organs are the seat; if the *post-mortem* examination discovers nothing which can account for those symptoms, it must be acknowledged that the opinion which we have now expressed, and which consists in regarding certain hepatic colics as neuralgic, is at least extremely probable.

5thly. There are some individuals in whom jaundice arises, becomes developed, and terminates without having been either preceded or accompanied by any species of symptom which could at all indicate any affection of the liver, or of any other organ. These persons would not consider themselves as ill, if they did not know that they were yellow. Most commonly, in this case, the bile continues to flow into the duodenum, as is indicated by the nature of the stools. When this takes place, the appetite is retained, no disturbance presents itself in the digestive functions, so that then there is very little probability that the jaundice had its origin in irritation of the digestive passages, and particularly of the duodenum, unless it be admitted that there may be duodenitis without any species of symptom indicating its existence.

Such are the different states of the system in which icterus may appear. Hitherto we have not yet deviated from the strict observation of facts; but, if we wish to inquire how, in consequence of one of these morbid states existing in the liver or elsewhere, it happens that a yellow colouring matter comes to impregnate most of the tissues, and is observed also in the liquids, we should find many difficulties to solve. Many physicians think that every jaundice is produced by the bile, which, being absorbed in the liver, enters into the torrent of the circulation, and is carried with the blood into all the tissues; but such absorption stands in need of proof. What fact demonstrates it, what analogy even warrants us in supposing it, in those numerous cases where jaundice accompanies different organic diseases of the liver, or where it comes on after a strong mental emotion? Do we see that the nervous influence, under other circumstances, increases absorption? If we must choose an hypothesis, I would prefer the opinion according to which it is admitted that jaundice supervenes, when the liver, changed in its texture or in its functions, ceases to separate from the mass of blood the materials of the bile which are supposed to exist therein. These materials, to be sure, have been found only in icteric patients; but urea also has only been found in the blood of animals whose kidneys had been removed. A fair interpretation of this last fact has, I think, been given, by saying that the quantity of urea which exists in the blood normally, cannot be discovered in it, because it exists in it in too small a quantity, being eliminated by the kidneys according as it is formed. The same may be said of the absence of the materials of the bile in the blood, when there is no jaundice. The absorption of the bile would seem more natural to admit, in cases of jaundice where there is obliteration of the biliary ducts. But even in these cases the jaundice may be accounted for in another way: the bile then ceases to be separated from the blood, because this separation would then be unattended with any result. Nothing can now pass by the ductus choledochus, the liquid to which it affords a passage will be no longer formed. There surely is nothing more surprising in this than in the circumstance that, under the influence of an irritation which acts only on the intestinal extremity of the ductus choledochus, the bile flows more abundantly into the duodenum. In both cases there is equally a correspondence of organic actions. It is a particular application of the law of synergy, as laid down by Barthez.

It is possible, also, that in some cases the yellow tint of the skin does not depend on the presence of bile in the blood, but rather on a sort of general ecchymosis, which takes place in the reticular layer of the cutis. May it not be so in several cases of jaundice of new-born infants, and in the yellow fever?

ARTICLE II.

GENERAL SYMPTOMS, OR DISTURBANCES PRESENTED BY THE FUNCTIONS OF THE DIFFERENT SYSTEMS IN DISEASES OF THE LIVER.

9. The disturbance which these functions undergo is very variable, not only according to the different affections with which the liver may be attacked, but also in one and the same affection, according to its acute or chronic state, its different degrees of intensity, and more particularly according to the habit of the individual attacked. Of these alterations of function some are purely mechanical, such are those serous collections of which the peritoneum and several portions of the cellular tissue become the seat, when the liver does not afford as free a passage as usual to the blood which traverses it. Other alterations of functions are the result of different organic lesions, which almost always accompany diseases of the liver; observation, in fact, proves that in these diseases there is often a complication of gastro-intestinal inflammation, which also is sometimes primary and sometimes secondary to the affection of the liver. Other alterations of function should be referred probably to the bad qualities of the bile which comes into the duodenum; thence arise certain disturbances of digestion, whilst others, again, are merely sympathetic.

The symptoms resulting from these different alterations of function, are often more marked than the local symptoms spoken of in the preceding article. They may present themselves either after the latter, or before them; they may exis alone during the entire course of the disease, and then their cause is frequently undiscovered, until a *post-mortem* examination has taken place. They are sometimes observed to exist only in an intermittent form : in the intermission the disease of the liver sometimes remains manifest, being reduced to some local symptoms ; the latter are sometimes either very obscure, or none at all. If the hepatic affection has as yet made but little progress, the patient's embonpoint is still retained, the strength is intact; and in the interval between the febrile disturbances, for instance, which are observed from time to time, and which may or may not be accompanied with tumefaction and pain of the hepatic region, the individuals enjoy good health, and there is no reason for supposing that any organ in them is seriously affected. If, on the contrary, the disease of the liver is more advanced, there remains, in the interval between these general symptoms, an habitual state of illness, a state of wasting, which puts it beyond all doubt that some important organ is seriously involved.

There are, again, diseases of the liver which, for the greater part of their duration, do not in any way disturb the different functions. This principally happens in those cases where hydatids, even of considerable size, are developed in the liver, this organ not having undergone any other alteration. Very often, under such circumstances, the digestion is not deranged, the circulation remains in its normal state, there is not even emaciation, the colour of the skin is natural, and, as there is not most ordinarily in this case any pain, it follows that, in order to discover the disease of the liver, there remains most commonly no other sign but the tumour formed in the hypochondrium by the hydatiferous sac. But this tumour may even not exist; so that in more than one case of this kind it was only after death that there was anything to indicate the diseased state of the liver ; and oftentimes we have been not a little surprised to find immense pouches full of hydatids in the liver of persons in whom nothing during life could have excited any suspicion of any affection of this organ.

SECTION I.

DISTURBANCE OF DIGESTION.

18. The function of digestion is more frequently disturbed in the different diseases of the liver than any other function ; from this disturbance symptoms arise often more serious and more alarming than those occasioned even by the disease of the biliary apparatus. But here first a question arises, namely, whether a great many diseases of the liver are not occasioned, in the first instance, by a gastro-intestinal affection. The observation of the symptoms inclines us to coincide with M. Broussais' opinion on this point, who admits that, in most of the cases of inflammation of the liver, there was duodenitis in the first instance. Sometimes, also, the *post-mortem* examination discovered no other change in icteric patients, except intense inflammation of the duodenum, which seemed to have extended to the biliary ducts. The examination of the causes under whose influence chronic hepatitis is frequently developed, would incline one to place the origin of it in the digestive tube. The result, in fact, of our observation is, that the great majority of persons who died of chronic hepatitis, whose history has been collected by us, had indulged freely in alcoholic liquors *. One can readily conceive how the excitement, habitually produced by these on the digestive mucous mem-

---

* These cases, of course, refer only to the lower classes of society.

brane, extended by continuity of tissue to the mucous membrane of the excretory bile ducts, and thence to the hepatic parenchyma. And further experience has proved that alcohol, introduced into the digestive passages of an animal, is rapidly absorbed. Now, may not the alcoholic molecules, carried directly into the liver by the meseraic veins, directly produce a powerful irritation in this organ? Again, it would be possible that, under some circumstances, the irritation extended from the intestines to the liver through the medium of venous inflammation. M. Ribes first proposed this opinion. Careful dissection has satisfied this skilful anatomist that erysipelas is often accompanied by an inflammation of the veins; and from this he thinks that it would not be impossible, that in certain gastro-intestinal inflammations, the veins which arise on the surface of the mucous membrane should be attacked with inflammation; that this extended from the small meseraic veins to the trunk of the vena portæ, and thus reached the parenchyma of the liver. We have met two cases which seem to confirm this opinion. One of these was that of an individual who died in the Charité. He had presented most of the symptoms of a bad continued fever; at first, there was violent reaction, skin very hot and dry, pulse full, tongue covered with a yellowish coat and dotted with red points, weight in the epigastrium, diarrhœa; then painful tension towards the region of the liver, slight yellow tint of the conjunctiva and of all the cutaneous surface; after this time rapid prostration, tongue dry, teeth and lips dark-coloured, evacuations passed involuntarily, low delirium and death.

The post mortem detected:—1st, A little dotted injection towards the great cul-de-sac of the stomach, which was in the mucous membrane; the membrane was not softened; it existed in several patches, which, if put together, might equal about a five-franc piece; 2dly, a healthy state of the duodenum, jejunum, and commencement of the ileum (white appearance of the mucous membrane, slight venous injection beneath it); 3dly, considerable injection of the mucous membrane of the ileum in its lower third, as also of the cœcum; 4thly, intense redness of the inner surface of the inferior mesenteric vein of the trunk of the vena portæ, and of all its hepatic ramifications, as far as the scalpel could trace them. The liver itself was large, very red, and gorged with friable blood. The splenic vein was not red, nor was the vena cava, nor its divisions; but the redness reappeared in the right auricle of the heart, and in the ventricle of the same side; it was also found, but in a slight degree, in the trunk of the pulmonary artery. The aorta, on the contrary, had retained its natural whiteness. We carefully noticed this inequality of colour in the different parts of the vascular system, because we think it proves that where redness did exist, it could not be considered as a mere effect of sanguineous imbibition. For why should not the latter effect have been produced equally in every part, in the vena cava as in the vena portæ, in the aorta as in the pulmonary artery? The blood contained in these several vessels presented everywhere the same physical conditions. From this we think we may conclude that there was in this case a real inflammation of the abdominal venous system, which extended to the liver, then to the right cavities of the heart, and which commenced to attack the pulmonary artery when death took place. The disease had presented as it were two periods satisfactorily explained by the lesions found on the dead body. If we compare these lesions with the symptoms, we shall be inclined to admit, that at first there was but a slight gastro-enterite; thence the symptoms of bilious fever which existed at the commencement. Subsequently it was changed into an adynamic fever. Painful tension of the right hypochondrium, and commencing jaundice, was all that was then observed. Were not these symptoms owing to phlebitis, which on reaching the liver, produced inflammation of it? It was so much the less probable that in this case the inflammation extended from the intestine to the liver through the medium of the mucous membranes, as the duodenum was found to be exempt from any appreciable change. It is not necessary to say that this case militates in favour of the opinion of MM. Bouillaud and Ribes, who make vascular inflammations perform a considerable part in the production of what are called essential fevers.

Another patient entered the Charité labouring under ascites. (We have given the case of this individual in another part of the work; a cancerous tumour was found in the pericardium.) At the post-mortem examination we found red induration of the liver; on making an incision into the veins of this viscus we were struck with the bright redness of their internal surface. On approaching the trunk of the vena portæ we observed that the internal membrane of this vein, and of its principal hepatic branches, might be detached from the subjacent tissues much more easily than usual; it was also much softer and more friable than in its ordinary state. In some branches a sort of pseudo-membrane lined the venous parietes in the form of a thin transparent and apparently inorganic web. The trunk itself of the vena portæ, as well as the principal branches which converge towards the liver in order to give rise to it, presented on their internal surface the same redness, and the same friability of their membrane. In the peritoneum there was a serous collection without any other trace of inflammation. In the digestive tube signs of chronic inflammation were found, such as the mammillated appearance and brownish colour of the gastric mucous membrane, the same colour in the duodenum, some ulcerations and remarkable development of the follicles, with a black colour around them towards the termination of the small intestine, in the cæcum, and at the commencement of the colon. It may be observed, that through the rest of the vascular system the internal surface of the vessels presented a white colour.

Several anatomical characters are here found combined to prove the existence of inflammation of the vena portæ, and of its divisions, whether hepatic or abdominal. This inflammation coincided with double chronic inflammation of the liver and digestive tube; and here again it is possible, though it is not demonstrated, that the inflammation attacked successively, 1st, the intestine; 2ndly, the venous system, which carries the blood from this intestine to the liver; 3rdly, the liver itself. What warrants us still further in making this supposition is, that we find from our notes that the disease commenced by diarrhœa, which seemed to be the only affection for a year at least. It was not till after this that some slight pains began to be felt in the right hypochondrium. The patient had jaundice twice, and at a still later period ascites came on. This succession of symptoms indicates at least that the disease of the liver was consecutive to that of the intestine.

19. Whatever be the way in which irritation extends from the intestine to the liver, it may present itself in its primary and consecutive seat with numerous degrees, and in very different forms. First, in the intestine all the disturbance may be confined to mere excitement, whether a simple attack, as when after a slight excess at table, jaundice manifests itself, with fever and painful tension of the right hypochondrium; or whether the attack be repeated, as when alcoholic liquors are frequently introduced into the digestive passages. In these different cases the excitement in the intestine does not seem to rise to the degree of inflammation, which, on the contrary, manifests itself in the more irritable liver. At other times there is really chronic gastro-enteritis; whilst at other times it is during the course of a well-marked acute gastro-enteritis that hepatitis manifests itself. With respect to the forms which the latter presents, when it succeeds gastro-intestinal irritation, they are very varied. Sometimes it is chronic from its onset, gives rise to no well-marked local symptom, and it is not till a long time after it has commenced that some signs indicate its existence. Sometimes jaundice is the only symptom observed, which appears during the progress of an intestinal inflammation; this is not attended either by heat or tumefaction of the hypochondrium. In this case the post-mortem examination may detect three states of the liver: 1st, an inflammatory state of its parenchyma indicated by

intense redness, considerable sanguineous engorgement, and well-marked softening*; 2ndly, nothing unusual, at least in appearance, in the hepatic parenchyma, but perceptible tumefaction of the internal membrane of the ductus choledochus and ductus hepaticus, the result of which is complete or incomplete obstruction of these ducts; 3dly, no appreciable lesion, either of the liver or of its excretory apparatus; which is no proof that the latter has been the seat of lesion during life, as I shall endeavour to demonstrate presently. With these three states of the liver the intestine is found in different degrees of inflammation, and in different points of its extent.

In other individuals hepatitis consecutive to an intestinal inflammation announces itself from its onset by more marked symptoms; for jaundice alone does not prove the existence of hepatitis. The patients feel some pain in different points of the right hypochondrium, or on the same side of the chest; pain is felt in this same hypochondrium, &c. These different symptoms of hepatitis may present themselves but once during the course of chronic gastro-enteritis; they may then either disappear or continue, either with or without intestinal inflammation. In other patients these symptoms appear and disappear several times; in the same way, for instance, as in the course of chronic stomatitis, the salivary glands are often inflamed only at intervals, or in the same way as wherever a chronic inflammation continues, the inflammatory swelling of the lymphatic ganglions in the neighbourhood appears only at intervals. But in these a period generally arrives when the engorgement becomes permanent. This also frequently happens with respect to the liver. When, during the course of a chronic gastro-enteritis, either attacks of jaundice have been seen to supervene several times, which were more or less prolonged, and were repeated at intervals more or less remote, or transient pains towards the region of the liver, or tumefaction of this organ equally transient, a period may also come when one or more of these symptoms become permanent; then it must be admitted, either that before this last period the affection of the liver, though not ceasing, was still so light as to indicate its existence only by intermittent symptoms, which supervened every time the affection became aggravated; or else, a thing which is more probable, that this affection was itself intermittent, subjected probably in its return to the state of the digestive tube.

20. Hitherto we have been considering only the case where the hepatitis seems to be consecutive to a gastro-intestinal inflammation. Another case more uncommon, but one which appears no less real, is that wherein the latter is, on the contrary, consecutive. More than once have we observed patients in whom no symptom had ever announced any disturbance whatever of the digestive functions; in them, however, there was unquestionably an affection of the biliary system, such as hypertrophy of the liver, red or white induration of that viscus, its cancerous degeneration, &c. During the course of one of these affections, and a long time after its commencement, the function of digestion only began to be disturbed. This case is one of the most favourable that can be met in cases of diseases of the liver; the patients under such circumstances decline, but very slowly, for the function of nutrition may still continue.

When a gastro-intestinal inflammation supervenes as a complication of an affection of the liver, it may be set up in a continued form, or be only transient, or return at intervals more or less distant. In the two latter cases its form is acute; in the former it may be either acute or chronic; if it is acute, nothing is more variable than the symptoms to which it gives rise; and from these different groups of symptoms there arise diseases of different aspects, to which particular names have been assigned. At first this gastro-enterite may indicate its existence principally by local symptoms. Thus the tongue, which had retained its natural state as long as there was only an affection of the liver, is covered with different coats, becomes red, dry, cleft, &c. The whitish coat which covers it is dotted with bright red points. The thirst, which till then was absent, becomes intense; there is vomiting, pain in the epigastrium, and diarrhœa. We have sometimes seen, in such cases, diseases of the liver, which had proceeded slowly, which had as yet produced no serious alteration in the constitution, and which till then had not been accompanied by any disturbance in the function of digestion, become complicated with all the symptoms of cholera morbus, such as violent vomiting, very copious alvine evacuations, sudden cold of the cutaneous surface: in two or three days the patients died; and on opening the bodies we found a bright red injection of the greater part of the gastro-intestinal mucous membrane, without any other alteration; so that this inflammation was more remarkable for its extent than for its severity in each of the points which it occupied.

---

* In an excellent article on abscesses of the liver, M. Louis states that he found the hepatic parenchyma around these abscesses red and softened, which further proves that redness and softening of the liver should be placed among the lesions which inflammation may produce in the organ. I feel additional confidence in my opinions when I find them coincide with those of so accurate an observer.

At other times, persons labouring for a long time under diseases of the liver, but still far from being exhausted, are seized suddenly with continued fever; their tongue becomes red, dry, and then black; their abdomen becomes tympanitic, diarrhœa supervenes; they fall into a complete adynamic state, and die rapidly. On opening the body, traces of acute inflammation are found in the digestive tube; this sometimes appears to have been intense; the mucous membrane is very red, softened, ulcerated in several points, and the severity of the symptoms is directly proportioned to that of the lesions; sometimes, on the contrary, the gastro-intestinal inflammation appears very slight; in the mucous membrane or beneath it, there is observed merely some vascular injection more or less extensive; but consider that this inflammation supervenes in an individual already exhausted by a chronic affection of an important organ; and from thence there exist in him conditions favourable to the development of a state of very great prostration, should any inflammation intervene, no matter how slight such inflammation may appear.

Whatever be the form under which attacks of acute gastro-enteritis may present themselves during the progress of chronic affections of the liver, it is important to know that they are one of the frequent causes of premature death in a great number of persons labouring under these affections. It may so happen that the disturbance of the digestive functions, after having existed at the onset at a period when the affection of the liver was as yet but little marked, disappears at a later period. According as the latter affection becomes more marked, the digestive function is found to return to its normal state, and does not become again deranged till a very advanced period of the disease of the liver.

SECTION II.

DISTURBANCE OF THE CIRCULATION.

21. The circulation may be disturbed in diseases of the liver, either sympathetically, as in the case of the heart and arteries, or in a manner purely mechanical, as takes place in several parts of the venous system, in the case where the blood contained in the vena portæ can no longer freely pass through the hepatic parenchyma.

A.—Sympathetic Disturbances of the Circulation.

22. First, there are cases of affections of the liver where the circulation is not at all modified in any way. The strength, frequency, and rhythm of the pulse are natural, the temperature of the skin is not raised. This complete absence of fever is scarcely ever observed in acute hepatitis; but it is not at all uncommon in the numerous shades of chronic hepatitis, even in the case where purulent abscesses exist in the substance of the organ, and where cancerous masses have attacked a portion of it; this complete apyrexia is still much more common when there is but simple hypertrophy of the liver, whether of its entire structure, or of either of its substances, or when it has undergone greater or less atrophy.

In other cases the circulation presents a marked disturbance, though there may be as yet no fever properly so called. This disturbance consists merely in acceleration of the pulse, without any change in the heat of the skin. Thus unusual frequency of the pulse, without any other sign of fever, often accompanies the different chronic affections of the liver already mentioned.

Lastly, there may be fever properly so called—that is to say, frequency of the pulse—with increase in the temperature of the skin and general indisposition. This fever may accompany the disease of the liver during its entire progress, a thing which is most frequently observed in cases of acute hepatitis. What is then remarkable is that sometimes, in such cases, the local symptoms which should indicate the existence of the hepatic affection are very obscure, nothing is observed but a continued fever, the non-essentiality of which can be proved only by a post-mortem examination. We once saw such a fever produced by an abscess formed in the liver. This was in the case of a young man who habitually enjoyed good health; after a long journey on horseback, he felt considerable indisposition, some headach, and great depression. For the first three days he considered this as the result of fatigue, and kept quiet; but on the fourth day a shivering fit supervened, and feeling himself worse he entered the hospital. Two days after his admission, that is, about the sixth day of his illness, we saw him for the first time. He was then in a state of great prostration. The redness on the cheek bones contrasted strikingly with the yellow tint over the remainder of the face. The patient complained of an insupportable pain of the head, situate over the orbits. The mouth was clammy, without being bitter; the tongue presented a whitish, uniform appearance, without any red points; the appetite was lost, but there was neither thirst, nausea, nor vomiting, nor any pain either in the epigastrium or in any other part of the abdomen, every part of which retained its natural soft feel. There was some constipation. Pulse from 112 to 115; it was strong and regular; the skin was burning hot and dry. We tried to no purpose to ascertain what organ was affected in this case. (Bleeding and diluent drinks.) From the seventh to the eleventh day he continued in the same state; he was then bled from the foot with the view of relieving the headach. On the night of the eleventh day his intellects became disturbed for the first time, and on the next morning we found him completely delirious. (Leeches behind the ears, sinapisms to the lower extremities.) From the twelfth to the sixteenth day the delirium continued; it became necessary to tie him in order to prevent him from escaping from the bed. There was frequent subsultus, the eyes were alternately open and shut, fixed or rolling rapidly in their orbits; the pupils were dilated and contracted alternately. With respect to the digestive passages and the abdominal organs in general, there existed no new symptom. On the morning of the seventeenth day, the patient was still quite vigorous, as appeared from the energy of his movements and the strength of his voice. Towards noon he died unexpectedly without any new symptom occurring. Since the last three days camphorated lavements had been given, and blisters had been applied to the lower extremities.

It was very evident that this person died of an affection of the brain; but he did not labour under it at the time he came into the hospital; up to the twelfth day of his illness he had presented no trace of it; however we must not lose sight of the intense pain of head which he complained of since the time we saw him, and which was so severe as to demand special treatment. The encephalon and its connexions were most carefully examined. The membranes of the brain retained their natural transparency and thickness; a few spoonsful of clear serum had been effused into the ventricles and at the base of the cranium. The substance of the encephalon presented nothing unusual with respect to its injection, colour, or consistence. The spinal cord was also examined; it, like the brain, was free from any appreciable alteration. The thoracic organs were healthy. The stomach presented here and there some small red points, which, all put together, would not exceed the breadth of a franc piece. Over the remainder of the digestive tube nothing was found but a little submucous injection residing in the large veins. Hitherto no lesion of any organ was found to account for the serious symptoms observed during life, when my friend Dr. Descieux made an incision in the liver, which on the outside seemed to be perfectly healthy. What was our astonishment, when at the bottom of this incision we found an abscess large enough to contain an orange! The pus was of a yellowish white colour, creamy and inodorous; it was in immediate contact with the substance of the liver, which to the extent of several inches around it was redder than elsewhere, and remarkably friable; slight pressure reduced it to a reddish pulp; this abscess was situated in the substance of the right lobe, not far from the convex portion of this lobe, which touches the diaphragm near the ribs. No other organic change.

Here then is an abscess of the liver which was formed without producing either pain, or tumefaction of the organ, or jaundice; the only phenomenon occasioned by it was a continued fever; the cause of it could not be discovered during life. We are very much inclined to think that an inflammatory process commenced in the liver, on the very day when, after the journey on horseback, signs of mere fatigue presented themselves. The intense headach of which the patient complained, was the first sympathetic phenomenon which the disease of the liver occasioned towards the brain. At a later period the function of this organ became more seriously deranged, and it was from the sympathetic irritation of the brain that the patient died. The original cause, however, of all the phenomena resided in the liver.

This case seems to furnish a very interesting fact in favour of the *localisation* of fevers, which, during life, seem not to be referable to any lesion of organs. Moreover it proves, contrary to M. Broussais' opinion, as has been already observed by MM. Boisseau, Bouillaud, Ribes, etc., namely, that the seat of what are called essential fevers is not necessarily in the digestive canal.

23. In some cases of chronic affections of the liver, there is ordinarily no fever, but at periods more or less remote, and which are not uniform in their return, a febrile disturbance supervenes, which may last for some hours only, or continue for several days. This accidental fever depends most frequently on a temporary exasperation of the lesion of the liver, which from being chronic tends to pass into the acute form. In this case, at the same time that fever manifests itself, we often see the local symptoms of the hepatic affections become much more marked. Pain, for instance, may appear, if it were previously absent, or become more acute, if it already existed. We know a lady, who for several years back has been labouring under an organic affection of the liver, which organ forms a tumour not easily circumscribed in the right hypochondrium. She experiences no pain in it except occasionally; this pain becomes much more acute, generally under

the influence of appreciable moral causes, and at the same time a very violent fever is observed to set in, accompanied often by delirium. An application of leeches over the right hypochondrium usually assuages these symptoms. Here the exasperation of the hepatic pain, and the success of the treatment adopted, do not allow us to doubt that the cause of the febrile commotion, and of the cerebral symptoms which accompany it, must reside in the liver, the chronic affection of which organ assumes for a time an acute character. In other persons the irregular returns of these accessions of fever appear to be less connected with the disease of the liver, than with an intercurring inflammation of the digestive tube.

24. Observation has proved that certain intermittent fevers are connected with an organic affection of the liver. But here, two cases may present themselves; sometimes the intermittent fever precedes this affection, or at least the symptoms which indicate it; sometimes it becomes developed during its progress *.

B.—DISTURBANCES OF THE CIRCULATION, OCCASIONED BY AN OBSTACLE TO THE FREE PASSAGE OF THE BLOOD WITHIN THE LIVER.

25. In our work on Pathological Anatomy we have detailed the results of modern experience and observation, with respect to partial or general dropsies produced by an obstacle to the passage of the blood. There is also a certain number of diseases of the liver which are accompanied by ascites, and in which the latter affection seems owing to the difficulty which the venous blood experiences in passing through the hepatic parenchyma. These diseases are not those, as might be supposed *à priori*, in which accidental productions, cancerous or tuberculous masses, hydatids, or large abscesses, occupy the place of the tissue of the liver. In these different cases, dropsy is not uniformly observed, and it scarcely comes on before the close of the disease. It is also rather uncommon, where there is merely hypertrophy of the liver without increase in its consistence. It is more common in cases of red, white, grey, or green induration of the hepatic parenchyma. Again, it is principally observed in a manner almost uniform in those cases wherein the size of the liver is diminished, whether this diminution affects equally the two substances, or whether the white substance be hypertrophied at the same time the red is atrophied, or whether this latter substance, without having diminished in size, has become less vascular than usual.

Here is what observation teaches us, and what might have been readily anticipated, as a consequence of the researches which we have already detailed respecting the morbid anatomy of the liver. It is precisely in those cases, wherein one may best admit an obliteration, an atrophy, a cellular or fibrous transformation of some of the vessels which ramify through the liver, that we see ascites most frequently developed. Nothing is more easily accounted for than its production under such circumstances. Serum accumulates in the peritoneum when the vena portæ hepatica ceases to give a free passage to the abdominal venous blood, in the same manner as a limb becomes infiltrated when its principal vein is obstructed. This connexion between certain partial dropsies, and an obstacle in the venous circulation, has been so well proved by my learned friend, M. Bouillaud, as also by those persons, who, after him, have devoted themselves to researches of this kind, that the mere existence of ascites, which almost invariably accompanies certain diseases of the liver, might again be given as a proof that, in these diseases, there is an obstacle to the venous circulation in the liver.

---

* Our author cites here two cases, in one of which hepatic disease was observed to come on during the course of an intermittent fever; in the second, the intermittent supervened during the progress of an old disease of the liver, the progress of which it seemed to accelerate in a very remarkable manner. M. Portal, our author remarks, was one of those who laid particular stress on intermittent fevers which are occasioned by an affection of the liver, or which at least coincide with it. It has been well observed, that such fevers never yield to quinquina, the effect of which is to render them more intractable, by contributing to aggravate the disease of the liver.—*Trans.*

That kind of affection of the liver, in which ascites most usually comes on, is one of those whose diagnosis is most obscure. In this case one cannot discover any tumour, as the size of the liver is diminished instead of being increased: very seldom there is any pain, and seldom are there observed any traces of jaundice. There is really nothing but the ascites which can then incline one to suspect that there is disease of the liver. Often in the Charité have we detected not only the existence of this disease, but we have been able to determine even its nature: for this purpose we must principally look to the way in which the dropsy commenced, to its progress, and to the local or general symptoms which preceded it. First, we may distinguish it with tolerable certainty from a dropsy produced by an organic affection of the heart, by this circumstance, that in this last case the first traces of serous effusion very seldom manifest themselves in the abdomen, they appear first around the ankles, then in the legs and thighs, and lastly in the peritoneum. Where, on the contrary, the dropsy is connected with an affection of the liver, it is in the peritoneum that the serum begins to accumulate, and it is only secondarily that the lower extremities become œdematous. Anatomy and physiology readily account for these differences. Ascites again may be the result of peritonitis, but most frequently there has been a period of the disease when peritoneal pains were felt. Lastly, ascites might be essential, that is, without any cause that we can discover; but this is extremely rare, and the greater number of cases of ascites, considered as essential by ancient authors, appear to have been precisely, in the great majority of circumstances, either the result of a peritonitis which has left no other trace behind it but a collection of serum, or the product of those diseases of the liver now under consideration, in which the organ has become atrophied, whether it be at the same time studded or not with those yellow or red granulations whose formation we have already explained.

There are some cases where the ascites results also from an obstacle to the free circulation of the blood in the vena portæ, but this obstacle no longer resides in the liver which is healthy; it exists along the course of the trunk of the vena portæ, or of its principal abdominal divisions, which are compressed by tumours of different kinds and different sizes. A fact of this kind was presented by the following case, which is also interesting in several other respects.

A young man, twenty-four years of age, who for several years back had an indolent engorgement of the lymphatic glands on both sides of the neck, presented several of the rational signs of an organic affection of the heart, when he entered the Charité. Face puffed, livid; lips and alæ nasi of a purple colour; œdema of the eye-lids; ascites, but very slight infiltration of the lower extremities. The respiration was short and hurried; it was principally performed by the action of the ribs; he could not lie on his back under pain of suffocation, and he passed his nights and days half-sitting up in his bed, his head and trunk being supported by pillows. This difficulty of breathing had gradually increased, but it was chiefly since the last year that the dyspnœa became painful to the patient; it was constantly increased under the influence of moist and rainy weather. The chest, when percussed, sounded well in every part; auscultation detected nothing unusual in the region of the heart, nor in any other part, so as to incline us to suspect the existence of a disease of this organ or of the large vessels. A mucous râle was heard in different parts of the chest; in other parts there was a dry, sibilous râle; in other parts again the respiratory murmur was clear but loud. For several months back the patient had been labouring under a cold; he had never spit blood, and when we saw him, he had merely a slight mucous expectoration. The appetite was rather good, and he had habitually a little diarrhœa, without any abdominal pain. The pulse was natural with respect to its frequency, strength, and rhythm.

There was nothing to show that this individual had an organic lesion of the heart, and yet this lesion seemed to be indicated by several of the symptoms, such as the appearance of the countenance, the dropsy, and orthopnœa. This dropsy presented, however, one circumstance which is not usually met in diseases of the heart; the inferior extremities were infiltrated only consecutively to the ascites, and again this infiltration was very slight. We know, on the contrary, that dropsy depending on disease of the heart, begins in the great majority of cases by œdema round the ankles.

Auscultation did not discover the cause of the dyspnæa either in the heart or in the lungs. The following was the treatment employed: bleeding, local and general; blisters to the chest and lower extremities; diuretic mixtures; frictions with tincture of digitalis and squill wine.

For the six weeks following, the state of the patient underwent no perceptible change; there was constant orthopnœa; the respiration became short the moment the patient tried to leave his bed for a little. We never observed any fever, properly speaking. Nothing as yet announced the approaching dissolution of the patient, when without any appreciable change in his state, he was seized on a sudden with extreme dyspnæa; the tracheal râle soon supervened, the respiration became embarrassed as in apoplectic patients, and in a few hours he died.

Post mortem. Nothing remarkable observed in the thoracic viscera, except a small number of miliary tubercles scattered through the pulmonary parenchyma, which was generally engorged but healthy and full of air. Some old cellular adhesions united the pleuræ costalis and pulmonalis on both sides. The anterior mediastinum was occupied by a large mass of tuberculated lymphatic ganglions. Through this mass the two diaphragmatic nerves passed; it was impossible to trace them through the numerous ganglions which surrounded and pressed them on all sides. They reappeared at a little distance from the diaphragm, and from the point where they became disengaged from the ganglionic mass to their distribution in the diaphragm, these nerves were remarkable for their greyish colour, resembling that which the optic nerve often presents when it goes to an eye which has been for a long time in a state of atrophy. In the abdomen the stomach was found healthy; numerous tubercles scattered over the mucous membrane of the small intestine; some ulcerations, small and superficial, to the extent of some inches above the ileo-cæcal valve; a tubercle about the size of a filbert in the cortical substance of one of the kidneys; cellular adhesion between the diaphragm and liver, the tissue of which was healthy; the spleen was soft and of considerable size; a considerable effusion of serum into the peritoneum; and lastly, before the vertebral column an enormous mass of lymphatic ganglions which had degenerated into tubercles, which forcibly compressed the vena cava on the one hand, and the vena portæ on the other, of which they surrounded the principal abdominal branches as well as the trunk. On each side of the neck, from the edge of the jaw to the clavicles, there was a large string of tuberculated lymphatic glands, like those of the thorax and abdomen. Several were placed between the vessels and the nerves of the neck, and the carotid artery and jugular vein were found separated by these glands. With respect to the pneumo-gastric nerve, some inches below the origin of the superior laryngeal nerve, it became lost in the mass of ganglions, in the midst of which it was impossible to find it. It reappeared a little above the clavicle, and was remarkable on both sides for its flattened appearance. Each axilla was occupied by a tumour as large as an orange, which was formed of a number of tuberculated lymphatic glands. The thoracic duct contained a small quantity of reddish serum.

26. Independently of the cause of dropsy, which appeared to be the compression of the large venous trunks, this case appeared to possess still further interest, in consequence of the state in which several of the nerves were found, which contribute to the function of respiration, the diaphragmatic nerves on the one hand, and the two cords of the eighth pair on the other. M. Berard has

mentioned the case of an individual in whom no other lesion was found to account for the very great dyspnœa which he presented during life, except a tumour developed in the substance of one of the diaphragmatic nerves. Here not only had the two diaphragmatic nerves undergone considerable alteration, which was sufficiently characterised by the grey colour and real atrophy of their lower extremity, but moreover the two pneumo-gastric nerves were seriously involved, as was manifestly proved by the flattened form they presented on escaping from the lymphatic tumour, in the midst of which it was impossible to trace them. Now, if the experiments of physiologists have proved that after the division of the eighth pair hematosis ceases to be duly performed, the lungs become engorged, and death supervenes at the end of a few days, may not the fact I have just cited be classed among this order of facts? There was here also a gradual diminution, and ultimately a cessation of the influence exercised by the eighth pair on the change of venous into arterial blood, thence the constantly increasing dyspnœa, etc. If this cause of dyspnœa will not be admitted, it will then be necessary to allow that the very great embarrassment of the respiration presented by this patient existed without our being able to detect in the dead body any lesion which could account for it; for I do not think that the tubercles, which were very small and very few in number, as found in the lungs, could in any way explain this dyspnœa, which for its intensity may be compared to that which occurs in the progress of the most serious organic diseases of the heart.

SECTION III.

DISTURBANCES OF THE SECRETIONS AND OF NUTRITION.

27. THE secretion of urine is that most frequently altered in diseases of the liver. The most remarkable of these alterations consists in the mixture of several elements of the bile with the ordinary principles of the urine. Physiology teaches us that among the different ways in which different foreign substances may be eliminated from the body, none is more active or more open than the renal apparatus. In icteric patients also the urine contains bile before the skin is coloured yellow; it happens even in more than one case of liver disease, that the skin does not lose its natural colour, whilst the tint acquired by the urine attests the presence of bile in the liquid. What is there astonishing in seeing the materials of the bile, which the liver no longer separates from the blood, make their exit from the system with the urea, when we constantly see a great number of substances not assimilable expelled with the same principle—substances what have been either formed in the system, or have been introduced from without?

The materials of the bile, when they are not sufficiently separated from the blood by their ordinary eliminating organ, may again escape from the system by other passages than the kidneys. Oftentimes, for instance, the matter of the cutaneous transpiration is impregnated with them, and if the patients sweat, their linen assumes a yellow tinge.

The mucus has appeared to us to contain bile, or at least its elements, much less frequently than the urine and sweat. The lingual mucus, for instance, is not more frequently yellow in cases of jaundice than in any other affection. Once, however, in a jaundiced individual, we found an extraordinary colouring of this mucus, and of that supplied by the membrane of the air passages; the upper surface of the tongue was covered by a thick coat of a fine green tint; the mucus expectorated presented the same colour. The conjunctivæ and skin were yellow as usual; the urine also presented the orange red tint usual to it in cases of jaundice. What was the cause of this extraordinary difference between the colour of the matter accidentally mixed with the products of the secretion of the mucous membranes, and the colour of that which impregnated the reticular tissue of the skin, and which tinged the urine?

To any person who has studied these facts, it becomes very probable that in a certain number of diseases whose cause seems to reside in a morbid matter which exists in the blood, whether it may have been introduced from without, or may have been formed in it, the secreting organs perform the important part of separating from the blood the principles which alter it. Is it not in this way, for instance, that we may account for the remarkable fetor of the cutaneous secretions, intestinal and urinary, in animals who have received putrid matter into their veins? What is that characteristic acid odour in the sweat of lying-in women during the milk fever? It is very evident that this can depend only on a new principle which is mixed up with the cutaneous exhalation, and which is indicated here by its odour, as it is indicated in icteric patients by its colour. Is not this principle one of those which must enter into the composition of the milk? A supplementary secretion separates it from the mass of the blood where it is formed, until the mammæ are sufficiently prepared to eliminate it. What is the result? this, that if the mammary gland does not discharge its function properly, the materials of the milky secretion will remain in the blood from which they must be eliminated, as we have seen the materials of the bile were, and as the principles of the urine are under other circumstances, by other exits than the kidneys. If we admit these facts, we have only to allow the consequences, by also admitting either the mixture of the principles of the milk with the different secreted liquids, or even their stagnation and deposition in certain organs, on the surface of serous membranes or elsewhere; and in order to favour their elimination, may not a process of irritation more or less dangerous be set up there? and if such be the cause of the latter, shall blood-letting, under such circumstances, be an efficacious mode of treatment? would it not be more rational, and more physiological, to stimulate some secretion, as for instance, that of the liver, or of the intestinal mucous membrane? Is it in this way that the purgative treatment employed by Doublet and other physicians acted in the cases of what are called puerperal fevers? There was something then not altogether unreasonable in the old belief in *milky metastases.*

We beg the reader to observe that we do not give any of those ideas as proved, we only require that they should be reflected on, because more than one fact, both physiological and pathological, really tends to demonstrate its accuracy, and because an opinion abandoned is not necessarily for that reason a false opinion.

28. Nutrition, properly so called, is seriously altered in most cases of chronic diseases of the liver. However, we seldom observe that extreme marasmus which accompanies pulmonary phthisis. There is even an accidental production whose development in the liver very rarely produces any wasting, unless it has attacked a very considerable portion of the hepatic parenchyma, namely hydatids. An abscess of small extent, a cancerous mass of inconsiderable size, oftentimes even a mere change in the size or consistence of the liver, occasion greater disturbance in the process of nutrition than those entozoaires do.

Diseases of the liver, whether acute or chronic, may also modify the functions of animal life, as well as those of nutritive life; but here nothing can be laid down in a general way; for there are as many modifications of the innervation as there are individuals. There are some patients in whom the nervous system remains in its normal state, whatever be the disorganisation which the liver has undergone. In others the least irritation of this organ reacts on the encephalon; it gives rise to these different groups of symptoms, which constitute ataxic fever. In their chronic state it may happen that affections of the liver, at the same time that they are indicated only by very slightly marked local symptoms, may produce by their sympathetic action on the nervous centres, a crowd of morbid phenomena, which may very properly be classed under the neuroses, their seat being in the nervous system, the real origin of which, however, is the affection of the liver.

CHAPTER III.

CASES.

29. WHATEVER exactness we may have endeavoured to attain in the general description which we have now given of diseases of the liver, we are fully sensible how far what we have said is from representing those infinite shades which these diseases may present in their anatomical characters, in their symptoms, their progress, complications, etc. This end cannot be attained without studying a certain number of cases, a study which is oftentimes painful, but always useful.

ARTICLE I.

CASES OF SANGUINEOUS CONGESTIONS OF THE LIVER.

CASE 1.—*Organic affection of the heart—Tumour in the right hypochondrium, the appearance of which coincided with every increase of the dyspnœa—Liver very large and gorged with blood.*

A man, 46 years of age, stated that he had been asthmatic from his youth. Only about one year before we saw him he perceived some œdema around the ankles; this œdema involved by degrees the entire of the lower extremities, proceeding from below upwards; subsequently the scrotum, and ultimately the abdomen, became tumefied. After lasting for three months this dropsy disappeared; but it reappeared two months before the patient's admission into the Charité; the dropsy was then almost general over the subcutaneous cellular tissue; the ascites was not very great; the respiration was very much impeded, the only position in which the patient could remain was that of sitting. The pulsations of the heart were but slightly heard, and with great irregularity in their rhythm, in the præcordial region, along the entire extent of the sternum, and in the epigastrium; the pulse was scarcely felt; several pulsations of the heart were frequently heard in regular succession without its being possible to perceive the arterial pulsations. The right hypochondrium was tense, without being painful. We discovered there a rounded body, which appearing to commence from behind the ribs, terminated in a blunt sort of border a little above the umbilical region. M. Lerminier directed sixteen ounces of blood to be taken from the arm, and twenty leeches to be applied to the anus. According as the blood flowed from the vein, the patient seemed to revive ; his breathing became freer, and the pulse improved. On the next morning this person, who the day before appeared to be dying, was no longer the same. The livid colour of the face was gone ; the pulse had again become regular and sufficiently strong ; the pulsations of the heart were heard to be more distinct. An evident change had taken place at the same time in the right hypochondrium, it was again soft and no tumour was felt. This improved state continued without variation for the three following weeks ; no change in the dropsy. But after this time, and without any known cause, the difficulty of breathing again became very great ; pulse very weak and irregular ; countenance assumed a livid tint, and at the same time the liver once more descended into the hypochondrium, where it became as perceptible as before. Blood-letting was again employed, but not with the same success as on the former occasion ; the state of asphyxia became more and more marked, and the patient died.

Post mortem.—Purple tint of the countenance was retained even after death ; arms and legs livid. Black blood, like currant jelly, distended the four cavities of the heart. The enlarged cavity of the right ventricle when emptied of its blood did not collapse ; its parietes were hypertrophied. The cavity of the left ventricle was also very large, and the thickness of its parietes very great. The different orifices of the heart were free. Some small white spots were found on the internal surface of the aorta. The lungs were infarcted, but healthy.

In the abdomen, the liver was very large ; it passed several fingers' breadth beyond the cartilaginous edges of the ribs ; by incision and slight pressure an enormous quantity of blood was made to flow from it. Its tissue, which was of the ordinary consistence, presented an almost uniform red tint, deeper however where the substance naturally exists which we have called spongy or cavernous, and which appears to be peculiarly vascular. The gall-bladder contained a small quantity of yellow bile. All the tissues were in general gorged with blood.

This case furnishes a striking example of one of those sanguineous congestions entirely mechanical, of which the liver may become the seat in persons labouring under an organic affection of the heart. In the most vascular part of the liver all the blood goes on accumulating, which, being conveyed to this organ by the vena portæ, cannot pass into the heart, and from this latter organ also there may be a reflux of a certain quantity. Then the liver becomes tumefied, just, for instance, as we see the corpora cavernosa penis become swollen in individuals who have been strangled. What is very remarkable is the extreme rapidity with which, on the one hand, the liver may acquire a prodigious size, and with which, on the other hand, it resumes its normal size, as soon as the obstruction to the venous circulation has been diminished. This real diminution of the liver was here very evident after the first bleeding.

Case 2.—*Active sanguineous congestion of the liver, without alteration of its texture (first degree of acute hepatitis.)—Jaundice accompanied with fever—Tumour in the right hypochondrium—Sympathetic irritation of the brain.*

A middle-aged man, of a strong constitution, skin brown, hair black, was labouring under jaundice with fever when he entered the Charité. Eight days before, his health, which till then was good, became deranged. He first felt a sort of weight towards the right hypochondrium. The physician who was then consulted, detected a tumour in this hypochondrium, and fever soon supervened. The patient was bled. When we saw him he had a well marked jaundice, which commenced only since the last three days ; pulse frequent, skin hot. He complained of no pain ; but on examining the abdomen the liver was found to be enlarged in the right hypochondrium. The tumour which it formed extended from the cartilaginous edge of the ribs, behind which it seemed to extend, to a little distance above the umbilicus: the edge of this organ was very easily circumscribed; the tumor did not go beyond the linea alba; it occasioned no pain, even on pressure. The tongue was whitish, without any red points; no bitter taste in the mouth; the appetite was lost, thirst considerable, epigastrium free from pain, stools natural. Urine rather scanty, and of a remarkable orange-yellow colour. This person was considered to labour under acute hepatitis. (Twenty-five leeches to the anus; emollient ptisans.)

During the five days following the state of the patient remained nearly the same. Fever was high, and there was some delirium every night. On the morning of the 7th day, dating from the time of his admission, the delirium of the night still continued; he fixed his eyes on those who stood around him, without answering their questions; he then spoke to himself, and in a very incoherent manner. Face was red, eyes injected; pulse from 115 to 120; skin burning hot and dry; icteric tint more marked than ever. (Twenty leaches along each jugular vein; sinapisms to the legs; lavement with an ounce of sulphate of soda.)

In the course of the day, there was alternately profound coma and violent agitation, during which he sent forth a piercing cry occasionally, which seemed to indicate acute suffering, whether real or imaginary. In the evening the pupil on duty obtained, with difficulty, three pallettes of blood from him. The blood, when taken, collected into a small dense coagulum, which was covered with a buffy coat of considerable thickness. Still, on the two following days, the cerebral symptoms continued with the same intensity and in the same form; they then suddenly changed character; the state of coma became continued; the patient fell into a state of stupor from which nothing could arouse him. The extremities, when raised, fell again by their own weight; still the skin covering them retained its sensibility, and the power of muscular contraction was not destroyed. The tumour in the right hypochondrium still continued; same state of pulse; and the jaundice still continued. The lungs, however, soon became engorged, the respiration was accompanied with a râle, and the patient died in a sort of apoplectic state, on the 12th day after his admission, and the 20th day after the appearance of the first morbid symptoms. During the last three days blisters were applied to the lower extremities, and one also to the nuclea.

Post mortem. The cerebral membranes were considerably injected, and from the substance of the brain, when sliced, drops of blood were seen to escape through several small points, the orifices of so many vessels. The encephalon and its membranes were then the seat of considerable sanguineous congestion; yet we have several times observed a similar congestion in persons whose nervous system presented no functional disturbance. Very little serum was effused into the ventricles and at the base of the cranium. The different parts of the encephalon were examined with the greatest care; nothing, however, was discovered there, nor in the spinal cord. Nothing remarkable in the thoracic organs, except considerable serous engorgement of the lungs.

The first object which struck us, on opening the abdomen, was the size of the liver. It passed beyond the edge of the ribs by several fingers' breadth. When seen externally, it was of a bright red colour. Each incision made in it caused a considerable quantity of blood to escape from it. Nothing else remarkable was observed in the abdominal viscera, except some injected veins which traversed in great numbers the submucous cellular tissue of the stomach, and different parts of the small intestine. There were also large veins gorged with the blood in the mesentery. The cartilages of the ribs, the fibrous membranes of the encephalon, heart, and spleen, the liquid contained in the thoracic duct, presented a well-marked yellow tint. This tint was observed, though in a less degree, on the external surface of the intestines.

The disease, whose history has been now detailed, presents two distinct periods for consideration. The first is marked by the local and general symptoms of an acute affection of the liver ; in the second, very serious nervous symptoms appear. In the first period there was tumefaction of the liver, fever, and jaundice ; there was no pain, nor was any symptom observed which could induce us to suspect that the affection of the liver was consecutive on any lesion of the digestive tube ; and, after death, this tube was found perfectly healthy. Neither was there anything found in the biliary ducts, which could account for the jaundice. Could this have been produced by the great sanguineous congestion of which the liver was the seat? During life we had the certainty that the excretory ducts of the bile were equally free, for the stools were constantly tinged with yellow. Here, then, is a case which demonstrates the possibility of the production of jaundice without previous production of obstruction in the ductus hepaticus or choledochus.

Before the nervous symptoms of the second period were very well marked, there was for several nights intermittent delirium, which seemed to depend on a sympathetic irritation, of which the brain became periodically the seat. Death was evidently the result of this irritation, which was now become continued. There was at first an exaltation, then a total abolition of the innervation ; and it was when the nervous influence ceased to act, in its normal way, on the lungs, that engorgement of the latter organs preceded for a little time the extinction of life. Still, what do we find to account for all these serious symptoms, to explain to us that remarkable disturbance in the action of the nervous centres? A little more blood than ordinary in the vessels of the brain and its investing membranes ; a little more blood than ordinary also investing the vessels of the liver, and nothing else! Very frequently such congestions are met, and nothing similar in the symptoms. Still we can hardly refuse believing that in this particular case the latter depended on this congestion; the sanguineous congestion of the liver having commenced with jaundice and fever, being indicated during life by tumefaction of the hypochondrium, seemed to have produced both this jaundice and fever ; the nightly delirium at first seemed also to depend on it ; and if this opinion is considered as well-founded, the consequence must be admitted, namely, that a further degree of sympathetic irritation of the encephalon was sufficient to produce all those further nervous disturbances. But, behind this visible part of the phenomena, their proximate and immediate cause lies concealed, and we, in our ignorance, designate it by the name of idiosyncrasy, or of individual disposition. It is this unequal force of vital resistance by which those infinitely varying effects can be explained, produced by one and the same lesion. The slightest lesion may react on all points of the system and produce death ; the most serious, with respect to organic disturbances, may not produce any important disturbance of the functions. The opinion which we now give has recently received support from an excellent article of M. Louis, on unforeseen and sudden deaths. We should then commit serious and continual mistakes, if from the lesions found on a dead body we should attempt to divine the symptoms which took place during life. Such calculations would, in many instances, prove very erroneous.

A considerable number of cases warrant us in thinking that active sanguineous congestions of the liver, such as that last detailed, are not very rare, whether as primary diseases, or as consecutive on other affections, and particularly on an inflammation of the digestive tube. They are indicated sometimes by mere tumefaction of the liver, with or without fever ; sometimes by these same symptoms, and further by jaundice, seldom by pain. We have seen many individuals in whom these several symptoms lasted but a very little time, and after their disappearance the health was perfectly re-established. In others there was an extraordinary disposition to the return of these hepatic congestions. We have had an opportunity of observing, among others, a young man in whom for the space of two years the hypochondrium became, five or six times at least, the seat of a tumour which, by reason of its form and situation, should be considered as appertaining to the tumefied liver. At the same time fever set in; twice only he had jaundice. This tumefaction of the right hypochondrium sometimes lasted for some days only, sometimes from fifteen days to three weeks. Each time advantage was derived from the application of leeches over the hypochondrium. These hepatic congestions finally disappeared, and there was no reason to suppose that they left any trace of organic affection in the liver. At other times the same congestions may really appear under a chronic form, remain continued for a very long time, without the liver, when examined after death, presenting any other alteration than an unusual accumulation of blood in its parenchyma.

Case 3.—*Jaundice and painful tumefaction of the right hypochondrium, continuing for more than a year—No other alteration of the biliary apparatus except sanguineous engorgement of the liver—Chronic duodenitis—Acute entero-colitis.*

A woman, thirty-five years of age, entered the Charité with jaundice. She gave the following account of the origin of her illness. Since the last three years she experienced from time to time a loss of appetite, bitter taste in the mouth, sense of weight in the epigastrium, and general lassitude. She took a vomit which removed these symptoms; but they soon returned, and were again treated in the same way, or by purgatives. About a year ago, having experienced the same symptoms, she took two grains of tartar emetic, which made her worse; her loss of appetite increased, an acute pain was felt towards the right of the epigastrium, and a few days after she found her skin of a yellow colour. Her physician then applied fifteen leeches to the anus, and administered medicines, the nature of which she knew not. During the time which intervened between the appearance of the jaundice and her admission into the Charité, she wasted away more and more; the yellowness of the skin continued; the pain on the right of the epigastrium was but temporary, but it was succeeded by a sensation of weight in the right hypochondrium, which the patient said she felt to be more tense and swollen than the left. From time to time, the mere sensation of weight which she referred to became changed into a pain more or less acute. The patient had neither nausea nor vomiting, but an habitual dislike for food; still whatever nutriment she took, whether solid or liquid, produced no pain. Her stools were not at any time devoid of colour. They were in general scanty, and variable in their consistence. When we saw this woman we were struck at her extreme state of emaciation. The jaundice was very marked; the conjunctivæ were of a bright yellow. We discovered a degree of tension in the right hypochondrium, which did not at all exist in the left; pressure was painful on this part, and we were unable accurately to circumscribe any tumour here. The remainder of the abdomen was soft and free from pain. There was complete anorexia, no thirst, tongue pale, without any coating; alvine evacuations of a yellow colour. The pulse became a little frequent towards evening, and then the temperature of the skin was a little raised. The urine was scanty, and of a beautiful orange-yellow colour.

The very long time the jaundice had continued, the progressive wasting of the patient, the painful swelling of the right hypochondrium, seemed to indicate a serious affection of the liver, probably a cancerous degeneration of this organ. The nature of the stools satisfied us that there was no obstruction of the bile ducts. The preceding circumstances seemed to indicate also an accompanying affection of the stomach, or rather of the upper portion of the small intestine. The region of the liver was directed to be rubbed with a mixture of calomel and axunge. After a month, profuse diarrhœa set in, which, during the first four days of its existence, resisted all treatment; but on the fifth day the abdomen became tympanitic, the pulse was now habitually frequent, the temperature of the skin was raised. On the seventh and eighth days there was constant fever, alvine evacuations very frequent and involuntary, great prostration of strength, features very much altered, speech now embarrassed, tongue dry, brown at its centre, no redness at its edges. Died on the ninth day.

Post mortem.—The dura mater and external surface of the brain of a very marked yellow colour. A very small quantity of serum effused into the pericardium presented the same yellow colour. The heart contained some fibrinous coagula divested of colouring matter. The serum contained in the thoracic duct was also yellow. The same colour presented itself on the external surface of the different parts contained in the abdomen. The internal surface of the stomach was pale. Mucous membrane healthy; large veins full of blood were seen to pass beneath it. All the inner surface of the duodenum, from the pyloric valve inclusively to as far as the commencement of the jejunum, presented a well-marked brownish red tint. The follicles of the duodenum, usually very large, were here much more so than usual. The mucous membrane of this part was very much thickened, and friable. Nothing morbid in the biliary ducts. The liver was remarkable for its size: it descended considerably below the cartilaginous edge of the ribs, and its left lobe touched the spleen. The upper four fifths of the small intestine were healthy; but at the lower fifth the mucous membrane was very much injected. This injection was also perceptible on the two surfaces of the ileo-cæcal valve and the interior of the cæcum. It diminished in the ascending colon, and then reappeared in the sigmoid flexure and in the rectum.

Here again is a case where to account for serious symptoms of considerable duration, we find lesions apparently very slight, which a superficial examination might have passed over. To account for a jaundice of one year's duration, for a disturbed digestion of a still longer standing, for a progressive wasting, for a febrile accession which was lighted up every evening, and lastly for an adynamic fever of which the patient died, nothing was found but a liver a little larger than usual, and a brown or red colouring of a small portion of the digestive tube. Let us see, however, whether we shall not be able to establish a correspondence between these lesions and the symptoms observed during life. Is it not to the existence of a chronic inflammation of the duodenum that the signs of gastric disturbance were attributable, which the patient complained of occasionally, before becoming jaundiced? Is it not this chronic duodenitis which, having been exasperated by the last emetic which the patient took, extended to the liver, and thus produced the jaundice? The sangineous congestion of the liver became chronic, as the duodenitis which had occasioned it. Under the influence of this two-fold lesion, the patient continued to waste away; she would not have presented more serious symptoms, if, for instance, she had been attacked with cancerous degeneration of both the stomach and liver. Therefore, we still repeat it, the severity and nature of the symptoms often depend much less on the severity and nature of the lesions than on the various dispositions of the individuals in whom these latter supervene, on the degree of sensibility of the patients, on the sympathies more or less numerous, more or less active, which come into play; besides we must not here confine ourselves merely to phenomena of this order; it must not be forgotten that it is in the duodenum that the chyme may be changed into nutritive matter. Now, if this intestine is in a state of chronic inflammation, can chylifaction continue to go on? This is scarcely probable; and there is again a powerful cause of wasting. The bad state of nutrition in this patient appeared such as would gradually bring her to the grave, when a new acute inflammation of another portion of the intestine supervened. The diarrhœa which indicated it at first, was soon followed by more serious symptoms, and the patient died in the midst of what is called adynamic fever, which, evidently in this case, was symptomatic of the entero-colitis. Besides, we think that any other acute inflammation supervening under such circumstances in an individual whose nutrition and innervation had been for a long time altered by chronic disease, any acute inflammation, we say, would have occasioned those same symptoms of adynamic fever.

It is now a well ascertained fact, that the diseases called bad fevers depend less on the intensity of the local inflammation, than on the dispositions in which this inflammation finds the individuals whom it attacks.

In this case, again, the jaundice was independent of all obstruction of the bile ducts, and it would indeed be a very difficult matter to account satisfactorily for its production. How could the twofold chronic inflammation of the duodenum and liver have continued for so long a time without producing any disorganisation in these parts; whilst in other individuals sanguineous congestion, very inconsiderable in intensity and duration, is rapidly followed by the most serious changes of nutrition or secretion? Be this as it may, we may easily conceive that where there is as yet no disorganisation, a cure is possible, however improbable it may appear by reason of the long duration of the disease. The subject of the following case, who presented symptoms very closely resembling those of the patient just mentioned, recovered perfectly.

CASE 4.—*Jaundice with tumour in the right hypochondrium—Hectic fever, wasting away for fifteen months—Recovery.*

A mechanic, about thirty-nine years of age, experienced for nearly a year before entering the Charité a dull pain in the lower part of the chest. At the same time there was general indisposition, great prostration, and loss of appetite. An application of leeches to the epigastrium removed these symptoms, and the patient thought himself restored to health. However, on the following days, the appetite, which had returned for a time, disappeared again, and soon after the eyes, and then the skin, became yellow. The patient could give but a very imperfect account of his subsequent symptoms and of the treatment. The jaundice continued for the eleven months following; the appetite never returned, some diarrhœa occurred from time to time, and at intervals some pains were felt in the right hypochondrium. Great emaciation followed. Up to this period no regular treatment had been adopted. When we first saw this patient we formed a very unfavourable prognosis on him. He was now in a state of marasmus; a slight febrile disturbance took place every night, and during the day the pulse lost nothing of its frequency. The jaundice was very strongly marked over the entire cutaneous surface. On examining the abdomen we discovered an unusual swelling in the right hypochondrium and in the epigastrium. On pressing the abdominal parietes from below upwards, we felt a little above the umbilicus a well defined edge, which appeared evidently to belong to the liver. In every part where this tumour was felt, pressure was a little painful. There was no appetite; there never had been either vomiting or nausea. The alvine evacuations were scanty, and consisted of hard black substances. Our unfavourable prognosis was founded principally on the long standing of the jaundice, and on the disturbance of the gastric functions, and principally on the emaciated state of the patient. One would have believed, and not without some reason, that there was organic lesion of the stomach and liver, which had undergone considerable increase in size. M. Lerminier on the first day ordered twelve leeches to be applied to the right hypochondrium. On the following days emollient ptisans, and some broths, were all the nourishment he took; afterwards he took some pills, consisting of calomel and soap, with some vegetable juices, Vichy water, etc. After remaining about one month in the hospital, the first change observed was a modification in the alvine evacuations; they were become yellow, of less consistence and less scanty; we then observed the tumefaction of the epigastrium and of the right hypochondrium become less and less perceptible, the jaundice diminished, the evening febrile accession disappeared, and the appetite returned. Three months after his admission the patient recovered flesh; the jaundice was gone. He went out perfectly recovered.

The unexpected recovery of this individual induces us to think that there was not in him, as in the preceding patient, anything more than mere chronic sanguineous congestion of the liver, or, if you will have it, a chronic hepatitis in the first stage, without serious alteration of the texture of the organ. Such cases are sufficiently uncommon to entitle them to the attention of the practitioner. The disease seemed to have commenced with inflammation of the digestive passages, which, having been attacked in its acute stage by the application of leeches, continued in the chronic form, and extended to the biliary apparatus. When we saw the patient, the only sign of gastric affection about him was a total loss of appetite. Was this symptom sufficient to prove the existence of gastritis? Be that as it may, at first leeches were applied over the part, where examination with the hand detected an hepatic engorgement; and after some days of mere antiphlogistic treatment, some calomel pills were given, some vegetable juices, and Vichy water. If there had been gastro-intestinal inflammation, must not these means have exasperated it? and yet it was during the employment of such treatment that we saw all the bad symptoms disappear by degrees, and the health return contrary to our expectation. English physicians will carefully note in this fact the change of the alvine evacuations, which returned to a much more natural state a little time after the calomel was commenced; they would observe that it was in consequence of this change in the nature of the stools, that any amendment was seen to take place. According to some, such an amendment should be accounted for by a revulsion established in the digestive tube; according to others, by a specific action on the liver, produced by the medicines employed; according to others, by one irritation, which, even in the liver, succeeded to another. For our part we shall confine ourselves to the statement of the fact, and to saying that the recovery took place at the same time that medicines were administered, which should have retarded it, according to the principles of the doctrine of irritation. We shall remark, however, that the very strict regimen under which the patient was placed, and the very close observance of the rules of hygiene, might also act an important part in the cure.

It will not, in my opinion, be out of place to subjoin to this case a fact observed in the city in my father's practice, and which affords another instance of recovery from an affection of the liver, which had been for a long time considered as likely to terminate fatally. I myself had an opportunity of observing the cases in different periods of its existence; both in the epigastrium, as well as in the right hypochondrium, I felt and detected the existence of tumours, which have since completely disappeared.

Madame the Marchioness de J—— had had for several years almost constant pains in the epigastric region, pains which increased after meals. When she had attained the critical period of life, her digestion became still more painful; the appetite diminished more and more; the skin assumed a yellow tint, which was soon changed to a real jaundice; the patient became emaciated, and some fever set in, which at first existed only in the evening and at night, and then assumed a continued form. At the same time that these different symptoms appeared, an unusual resistance began to be felt in the epigastrium and right hypochondrium. In a short time the existence of a tumour in these regions was no longer a matter of doubt; its form and situation seemed to indicate that this tumour appertained to the liver; some inequalities were felt in it. Pressure generally gave pain; there was alternately constipation and purging. In about a year the patient was reduced almost to the last stage of marasmus; the lower extremities were usually a little infiltrated. Several physicians, MM. Portal and Lerminier among others, thought, with my father and me, that this lady laboured under organic disease of the liver, and the prognosis was of course very unfavourable. The patient was now unable to digest anything. Mercurial frictions were employed over the region of the liver, without appearing to do either good or harm. One day, after having taken some vegetable juice, Madame de J. had some vomiting, and particularly very profuse diarrhœa. But what was remarkable, after this kind of indigestion as she called it, she found herself evidently better. It is quite certain that, dating from this period (whether there was a real connexion or mere coincidence,) the disease, which till then seemed continually to become more alarming, began to assume a less unfavourable aspect. The fever ceased to be continued; the tumefaction of the hypochondrium and of the epigastrium diminished; the inequalities felt in that region were no longer perceptible; the jaundice became less marked. The patient was then put on asses' milk for nourishment; this she bore very well, and she eventually took a great quantity of it every day. By degrees her appetite returned, the digestive functions were restored, she began to be able to take solid food, her flesh returned, the jaundice disappeared completely with the tumour of the liver. This lady is at present in the enjoyment of good health; her appetite and digestion are excellent, and she is able to perform long journeys on foot.

It is very remarkable that, in the two cases of recovering from liver affection now detailed, the improvement commenced in consequence of a change produced by art: in the first case the stools became gradually more frequent, more liquid, more yellow; in the second case a profuse diarrhœa set in all at once. If this were the proper place, we should feel no reluctance to cite some cases witnessed by ourselves, in which we have seen different morbid states improve and recover after the administration of the too celebrated purgative of *Le Roy*, which, in the hands of ignorant practitioners, has made so many victims. The more the present direction of medical opinion turns physicians from such a system of treatment, the more important is it to inquire into its effects, and to satisfy ourselves whether here, as in most human affairs, a small portion of good may not be found mixed up with much that is bad.

CASE 5.—*Chronic gastritis—Intermittent hepatitis; indolent tumour in the right hypochondrium, jaundice—Cure of the liver affection.*

An individual, about sixty-three years of age, who had for several years back been labouring under painful digestion, habitual pain in the epigastrium, frequent vomiting of acrid matters, etc., met with a severe reverse in his circumstances about a month before entering the Charité. During the fifteen days following, the pain in the epigastrium was more acute, frequent nausea, total loss of appetite, and, at the end of these fifteen days, an appearance of jaundice. After the latter had been in existence about a fortnight, he entered the Charité. All the skin was then of a yellow colour, as also the conjunctivæ. On examining the abdomen with the hand, the edge of the liver was felt full two fingers' breadth below the cartilaginous edge of the ribs. Tongue natural, epigastrium moderately sensible, frequent eructations; the patient vomited from time to time a yellow and bitter liquid in considerable quantity, having all the physical characters of bile: there was not then any obliteration of the ductus choledochus, or of the hepatic duct. But, what is strange, at the same time that bile was vomited up in great abundance, the stools were entirely devoid of colour, like clay. They were also scanty. No fever at all. Twelve grains of calomel were prescribed, which procured no alvine evacuation. For the five days following he remained in the same state. Great itching in the skin. Urine of a deep orange-red colour (nitre whey, emollient lavements.) Two ounces of castor oil were then prescribed to be taken in several cups of vegetable broth. From five to six stools were obtained. On the two following days lavements, with one ounce of sulphate of soda and half an ounce of senna leaves. (Whey, with a drachm of acetate of potash.) Three or four days after, recourse was again had to the castor oil. Under the influence of this treatment, the following series of phenomena supervened: the bilious vomiting ceased, according as alvine evacuations of a bilious character were obtained. The tumour in the right hypochondrium diminished, then disappeared. The urine assumed a more natural appearance, the yellowness of the skin diminished, the pulse remained uniformly free from frequency. Things being in this state, M. Lerminier prescribed some glasses of Vichy water, and pills consisting of calomel and soap (two grains of each.) Frictions were used over the right hypochondrium, with an ointment consisting of an ounce of cerate and a drachm of calomel. After remaining three weeks in the Charité, there was no longer any trace of jaundice; the right hypochondrium again became soft, the vomiting had ceased for a long time, and the digestive functions were soon perfectly re-established.

This case is remarkable with respect to the succession, the order of connexion of the morbid phenomena, and with respect to the treatment adopted.

The patient had, for a long time back, all the signs of chronic gastritis, when, in consequence of an intense mental excitement, this gastritis became worse, and at a later period the symptoms of an affection of the liver manifested themselves. It is possible that there was in this case inflammation of the biliary ducts; but the matter vomited always proved that these canals were not obliterated, and that the bile entered the duodenum. But what was remarkable is, that whilst much bile was vomited, there was none in the alvine evacuations; so that one would have said that, according as it entered the duodenum, an antiperistaltic motion of this intestine drove it towards the stomach. All we know about the liver affection is, that there was jaundice and considerable tumefaction of this organ. However, after a certain time, and according as the alvine evacuations began to be tinged with bile, all sign of the liver affection disappeared; and when the patient left the hospital, the old symptoms of chronic gastritis were also very much mitigated.

If we now inquire under the influence of what treatment the cure of the disease of the liver, and the improvement of that of the stomach, appeared to be produced, we shall find that it all occurred during the employment of purgatives. But we shall not forget that, whilst in this particular case these purgatives had a happy influence on the twofold disease of the stomach and liver, probably by occasionally producing a revulsive fluxion on a lower part of the digestive tube; under other circumstances, on the contrary, the employment of these same purgatives has quite a contrary effect, it irritates the liver and produces jaundice. The question now would be to determine with precision the cases where one or other of these effects takes place. We have more than once seen obstinate bilious vomiting with constipation, which was accompanied with fever, resist the application of leeches over the epigastrium, and disappear at the same time that profuse alvine evacuations, the result of a purgative, were established. The fever also ceased, and the health was soon restored.

RESUMÉ OF THE PRECEDING OBSERVATIONS.

The observations now presented to the reader appear interesting for more than one reason.

1st. With respect to etiology, they prove that diseases of the liver may be consecutive on gastro-intestinal inflammation, but that at other times they are primary. It is not necessary to cite numerous cases on this point; one well authenticated fact is sufficient.

2nd. They present instances of different shades of acute or chronic hepatitis, of sanguineous congestions in the liver, which may be but temporary, or may continue for a very long time, without any serious alteration of nutrition taking place in this organ, or without any morbid secretions arising.

3rd. Such affections of the liver may terminate in death, either in their acute state, by reacting sympathetically on the nervous centres, or in their chronic state by the progressive wasting which they occasion; but, in the great majority of these cases, this wasting depends as much on an accompanying affection of the digestive tube as on the disease of the liver.

4th. They may also terminate favourably by return to health, either in their acute, or in their chronic state, after having produced considerable emaciation of the patients, and after giving rise to most of the symptoms which ordinarily mark the most serious degenerations of the liver.

5th. In their acute state they may manifest their presence either solely by a febrile disturbance with sympathetic re-action, more or less marked on different organs, without there being either a tumour in the hypochondrium, or jaundice, or pain; or by these latter symptoms which may exist separate or combined.

In their chronic state these sanguineous congestions, or attacks of hepatitis, may simulate by their symptoms, as has been just said (Coroll. 4), the different changes of texture to be mentioned in the following paragraphs :—

6th. They may either be continued or present themselves only in an intermittent form.

7th. The jaundice, which often accompanies them, is not always accompanied with an obstruction of the bile ducts.

8th. We have seen two kinds of treatment succeed in these diseases; *a*, the antiphlogistic treatment; *b*, the treatment by purgatives.

9th. This latter species of treatment has given rise to results so remarkable, that physicians even endeavour to obtain them, by devoting themselves to the same researches as we have done.

10th. There are other cases where the treatment by purgatives has been evidently injurious.

11th. It still remains to determine more accurately than we have ourselves done, what are the cases where one or other of these modes of treatment may be employed with most advantage. Can the cases wherein the method by evacuation has proved efficacious be all explained by the principle of revulsion? We doubt it.

ACTICLE II.

CASES RELATING TO THE ALTERATIONS OF NUTRITION OF THE PARENCHYMA OF THE LIVER.

In the preceding cases we have seen no other change in the liver except an unusual accumulation of blood within its substance. Observation has showed us that this active sanguineous congestion, this first degree of inflammation, may continue for an indefinite period in the liver, without this latter organ becoming more seriously altered. But at other times, whether consecutively on this same sanguineous congestion, or simultaneously with it, or without its being possible to demonstrate otherwise than by analogy that it ever existed, the nutrition of the liver deviates from its normal state; whence there may result, 1st, different modifications in its form, size, colour, and consistence; 2nd, changes more or less appreciable in its circulation, and, in consequence, divers local or general symptoms, depending on the different species of changes which the organ has undergone.

SECTION I.

OBSERVATIONS ON HYPERTROPHY OF THE LIVER.

CASE 6.—*General hypertrophy of the liver—Chronic gastro-duodenitis—No jaundice.*

A printing compositor, forty-three years of age, entered the Charité in the following state: great emaciation, face pale; copper-coloured spots on the skin of the chest, back, and extremities. Sharp edge of the liver very distinctly felt a little below the umbilicus, and capable of being traced towards the left side, to the extent of two or three fingers' breadth beyond this point. In all the space included between two lines supposed drawn the one from the middle of the cartilaginous edge of the left false ribs to as far as a little below the umbilicus, and the other from this last point as far as the right flank, there is felt a hard body, with smooth surface, which terminates inferiorly at the sharp edge now mentioned, the limits of which on the left cannot be accurately defined, and which superiorly seems to be continued behind the ribs. We had no doubt but this body was the liver enlarged. The tumour which it formed was completely indolent. But when the patient ate, or drank wine, he experienced a painful sensation in the epigastrium, which sometimes was but momentary, and sometimes continued for several hours. The tongue retained its natural appearance; or, if it deviated from it, it was only in becoming paler. There was habitual anorexia, without any increase of thirst, without nausea or vomiting. The stools were scanty, consisting of hard and brown matter; urine small in quantity, red, and depositing a sediment. The pulse was habitually frequent, without the skin being hot. The patient stated, that six years before entering the hospital he took a great quantity of Van Swieten's liquor and of the decoction of sarsaparilla, and that these remedies not freeing him from large indolent buboes which appeared in the groin after chancres on the penis, he took, by the advice of an individual who judged of his case by the appearance of his urine, a certain quantity of sulphuric acid combined with cream of tartar. But after employing this remedy for several days, he was seized on a sudden with an acute tearing pain in the epigastrium, the appearance of which was accompanied with a temporary loss of consciousness, and convulsions resembling those of epilepsy. During the fifteen days following, he kept his bed; the epigastric pain assumed gradually its original severity; but from this period digestion remained painful, the appetite was lost, the patient's strength and flesh gradually diminished. The patient was not aware of the existence of the tumour formed by the liver, which is not to be wondered at, since it did not project through the abdominal parietes, and was not painful.

This person lived for nearly six weeks in the Charité: during this time we saw him pine away, and grow weaker and weaker. He never had fever, properly speaking. During the last ten days of his life, he vomited four different times, and in large quantity every time, a black matter resembling coffee grounds; from that time, his features went on changing more, the extremities became cold. Coma set in, and he died.

Post mortem. The abdominal parietes being removed, the first object which struck us was the enormous size which the liver had attained. It covered a great portion of the intestines, extended inferiorly to a little above the crest of the ileum, and passed considerably beyond the linea alba. With respect to size, it bore somewhat the same relation to the other organs that it does in the fœtus. Its external surface presented the two natural substances of the liver in a very marked manner. The same was observed internally. There was nothing abnormal in the texture of the organ. It was neither harder nor softer than usual; on making an incision, only a small quantity of blood flowed from it. The gall-bladder did not contain more bile than usual; this bile was of a clear yellow colour.

The stomach, which was small and contracted, was concealed by the liver. Its parietes were hard to the touch. Its external surface was of a slate colour throughout its entire extent, and was as it were mammillated. The latter appearance depended on considerable hypertrophy of the mucous membrane. This hypertrophy was unequal in intensity in different points of the stomach; where it was very marked, its existence was indicated by a sort of elevations, and between them were depressions where the mucous membrane was rather attenuated. The submucous cellular tissue participated a little, particularly towards the pylorus, in the thickening of the membrane which covered it. The duodenum presented on its internal surface the same slate-coloured tint as we had already found in the stomach. The suprarenal capsules appeared very much enlarged. A great quantity of black colouring matter was deposited in the cellular tissue of the lungs, both the interlobular and intervesicular; there was a great quantity of it also in the bronchial glands.

This case presents to us an instance of disease of the liver which consists solely in a more active nutrition of this organ, similar to that of which the heart is sometimes the seat. There was an increase in the number of its molecules, without their density, texture, anatomical or chemical composition being at all modified. Can we say that the production of such a state was preceded by inflammation, or simply of a more copious and active afflux of blood than that of which the liver is ordinarily the seat? Might it not be as well supposed that the same quantity of blood as usual coming to the liver, there was separated from it by a more active elaboration, a greater quantity of nutritive materials?

Of the different symptoms presented by the patient, none seemed to be connected with the affection of the liver. There was neither jaundice nor dropsy; there was in fact no reason for the occurrence of the latter disease, as the liver was not, properly speaking, engorged, nor were its vessels obstructed. The bad symptoms, the emaciation, and death appear principally to have been owing to the gastric duodenitis. The cause, under the influence of which this occurred, is evident. Having appeared at first in an acute form after the introduction of a certain quantity of sulphuric acid into the stomach, it continued in a chronic form for six years, at the end of which time, the constantly increasing abolition of the digestive functions produced wasting and death. It is possible that the hypertrophy of the liver was consecutive on the gastro-duodenal inflammation, and this circumstance might induce one to think that the hypertrophy was the result of an inflammatory process.

One might suppose, *à priori*, that in a case where the nutrition of the liver had taken on so extraordinary an increase, the secretion of bile should also become proportionally increased. However, this was not the case: during life but little bile had been discharged, and after death the gall-bladder contained but a small quantity of it; even that contained in it seemed to consist of more water and albumen than usual, as if at the same time that the nutrition of the liver became more active, its secreting power diminished. The following case will serve probably to confirm this conjecture: it will furnish an instance of jaundice without any other alteration of the liver than simple hypertrophy.

CARE 7.—*General hypertrophy of the liver, with jaundice—Diarrhœa for some time before death, without any appreciable alteration of the intestine—Attenuation of the parietes of the stomach.*

A gardener, thirty-three years of age, presented a greenish yellow tinge over all the skin, when he entered the Charité. He told us that he had had jaundice for about the last three years; that it came on without his being able to assign any cause for it; that before the appearance of this jaundice, he had always enjoyed good health, and that during the first year he had not even felt ill; but that gradually during the two following years his strength had diminished, and a state of considerable emaciation had succeeded to his habitual embonpoint; he had lost appetite, and, without ever experiencing any real pain in the epigastrium, he felt a sense of weight and fulness in this region after eating; he had from time to time some diarrhœa. When this patient came under our observation, we detected in the abdomen a tumour precisely similar to that described in the sixth case. It had the same form and the same extent; like that it was not painful; the tongue was natural, the mouth was free from any bitter taste, stools scanty, of moderate consistence, and *white*. Pulse not frequent. We saw this patient continually waste away; towards the termination of life serous and profuse diarrhœa set in and accelerated death. The patient had been treated merely with demulcents.

Post mortem.—The liver, which was of an enormous size, touched inferiorly the crest of the right ileum; and on the left it extended as far as the flank. In other respects its texture did not appear in any way altered; and on making an incision, or by pressure, only a small quantity of blood was made to flow from it. The gall-bladder contained nothing but a serous liquid, very slightly tinged of a yellow colour. The bile ducts were empty, and their mucous membrane of a greyish colour, without appearing to be at all changed in texture.

The internal texture of the stomach was pale, even over all its splenic portion; its parietes were so attenuated as to be transparent: in vain did we seek for some traces of the muscular tunic; the mucous membrane itself was no longer apparent; all that was seen there was a cellular web, smooth and polished externally, to form the peritoneum. We found no other appreciable alteration in the digestive tube.

This case resembles the preceding both with respect to the alteration of the liver, and the absence either of pain or dropsy. But in the subject of the sixth case there was no jaundice. Only the elements of the bile contained in the gall-bladder seemed to be less in quantity than usual. Here there was a well-marked jaundice, and there was nothing to prove that in this hypertrophied liver the bile was still secreted, or if it was, it was but in very small quantity. In fact the gall-bladder contained instead of bile nothing but a little serum with a slightly yellow tinge; the bile ducts were devoid of colour, as if no bile passed through them for a long time; and during life the alvine evacuations did not appear to contain any. It appeared, then, that according as the nutrition of the liver became unusually active, its power of secretion became more and more diminished, and it at length was entirely abolished. The materials of the bile no longer finding a passage through this natural emunctory, and being but imperfectly eliminated by the kidneys, partly remained in the blood, and the colouring matter of the bile impregnated many of the tissues, or was deposited in them; thence the production of jaundice.

But what was the cause of the progressive wasting of the patient? Must we admit that the unusual and long continued presence of the materials of the bile in the blood produced an injurious influence on the nutrition and vital properties of the different parts to which it was distributed? Was it the active process of nutrition going on in the liver, which, concentrating an inordinate degree of force in this organ, prevented the other parts from being able properly to repair their losses? No doubt one or other of these causes may contribute to the wasting of the patient; but what must not be forgotten as a cause of this wasting, is the state of the stomach. Atrophied as it was over a considerable portion of its extent, could it still duly perform the function of chymefaction? Thus, during life there was loss of appetite, and epigastric weight after the taking of food. But was this atrophy, this attenuation of the gastric parietes, the result of a previous inflammation or irritation? There is nothing to prove it.

With respect to the diarrhœa which existed towards the termination of life, we found no appreciable alteration in the intestine to account for it. Those who will have it that wherever there is an increase in the habitual secretion, there has been previous increase in the afflux of blood, or a process of irritation, will also admit it in this case, though pathological anatomy detects no trace of it. It would then be necessary to commence to show that every time a liquid is separated from the blood in a greater quantity than usual, there has been vital exaltation, irritation, or inflammation in the part where this separation takes place. But this is in many cases a mere hypothesis, for which many others might equally well be substituted. Still further, there are facts which directly combat this hypothesis. Is there irritation in the cold, pallid skin of an individual who is about to die, or who falls into a faint? Oftentimes, however, this icy cold, bloodless skin is covered with a profuse sweat.

SECTION II.

SOFTENING OF THE LIVER.

Case 8.—*Red softening of the liver—Continued fever with pain in the right hypochondrium—Very slight icteric tint, urine yellow—Complication of acute peritonitis.*

A man, thirty-nine years of age, was in the enjoyment of good health, when on the 17th of October he felt an acute pain over all the inferior and lateral part of the right side of the chest under the false ribs. The preceding night he had not slept, and had felt some shivering. For the three following days this pain continued; there was fever. On the 20th of October we found the patient in the following state: the cheeks (pommettes) were of a bright red colour, the rest of the face pale; the conjunctivæ were of a natural colour; the patient felt in the lower and right side of the chest, from the seventh to about the eleventh rib, a continued intense pain, which was increased neither by pressure nor by percussion. It became more acute by lying on the left side. The right hypochondrium had retained its soft feel, and might be pressed without pain; the breathing was free; there was no cough; the respiratory murmur was heard in every part distinct and not too loud; the tongue was whitish, not much thirst, epigastrium not painful, nor the rest of the abdomen. There had been no stool since the commencement of the disease; the pulse was strong and frequent; the skin hot, and covered with a profuse sweat, which tinged the linen of a yellow colour; the urine, which was in the ordinary quantity, presented a yellow colour of well marked bile.

What was the nature of this affection? was it a pleuritis? but there would have been some cough, and more especially the pain would have been increased by the inspiratory movements. One circumstance struck us, namely, the yellow colour of the urine, as well as the deposition of the same colour which the sweat left on the linen. Did not this indicate a disturbance in the biliary secretion? and might we not from this presume that the pain above described was connected with the liver, or at least with its fibro-serous envelope? thence the febrile disturbance, which was not accounted for by any apparent lesion of the digestive tube. M. Lerminier prescribed a bleeding of sixteen ounces, twenty leeches to the anus, linseed ptisan, and emollient lavements. During the three days following the different symptoms now described continued; the conjunctivæ also assumed a slight yellow tint, as well as the skin of the face and of the anterior part of the chest. Only one evacuation was obtained by each lavement. He coughed a little, and the expectoration was that of simple catarrh (emollient ptisans, strict diet).

The disease was now come to the eighth day, nor was there as yet any appearance of its resolution, neither did any thing of a decidedly alarming character as yet present itself, when all at once the pain of the lower part of the chest on the right side became very severe, and extended to the right hypochondrium. On the tenth day the latter was very sensible on the least pressure; twelve leeches were applied to it. In the course of the day the pain extended to the entire abdomen. It was every where increased by pressure. At the same time the skin which remained constantly moist, became dry; the pulse became small and wiry, and much more frequent; the features were strikingly altered (thirty leeches over the abdomen). From the eleventh to the thirteenth day the abdominal pains continued, the cause of which evidently lay in an inflammation of the peritoneum; tension of the abdomen; some vomiting; constipation; pulse thready; gradual coldness of the cutaneous surface. He died on the fourteenth day of the primary disease, and on the seventh of the peritonitis.

Post mortem. Effusion of a small quantity of purulent liquid into the peritoneum, principally in both flanks. The convolutions of the intestines were held together slightly by soft pseudo-membranes of recent formation. The entire liver was as it were enveloped by a thick purulent stratum, extended into the form of membrane. On drawing this organ slightly out of its place, we were astonished at tearing it. Its tissue was extremely friable. It was reduced into a reddish pulp by the least pressure. The tissue of the liver thus softened resembled the tissue of certain softened spleens. It was of a uniformly red colour, and presented no other alteration of texture. Its size was not perceptibly increased.

We here find a more serious alteration than in the preceding cases. There is no longer merely an unusual accumulation of blood, or a more active nutrition of the organ; its consistence is modified, and through its entire extent slight pressure reduced it to a sort of reddish pulp. If we inquire when this remarkable softening of the liver commenced, we shall consider it as very probable that it was an acute affection, and one which was the result of a real hepatitis, the first symptoms of which appeared on the 17th of October. We see how slightly marked these symptoms were. The hypochondrium was free from pain, and not swollen; there was merely pain on a line with the last ribs on the right side. But of how many different affections might not this pain be the sign! we have seen in the course of the case how the state of the urine and of the sweats contributed to throw light on the real nature of the disease, and how, at a later period, the slight icteric tint of the skin and conjunctivæ came to confirm the diagnosis.

There is nothing to prove that in this case the point of departure of the hepatitis was a gastro-intestinal inflammation. But one might ask whether the pain depended on an inflammation of the parenchyma of the liver, or whether it was not rather the result of an inflammation developed in the portion of the peritoneum which surrounds the liver.

Case 9.—*Softening of the liver with loss of colour of its tissue—Serum instead of bile in the gall-bladder; bilious yellow colour of the urine and sweat, without jaundice, whitish stools—Symptoms of chronic gastritis with healthy state of the stomach.*

A shoe-maker, about fifty-eight years of age, commenced to lose flesh, and strength, and to suffer from indigestion about two years before entering the Charité. He never had any pain in the epigastrium, nor in any part of the abdomen; never any nausea or vomiting; but there was loss of appetite, at first existing only at intervals, and then becoming constant, a feeling of indisposition, and of weight towards the lower part of the epigastrium to the right side, five or six hours after taking food. Only one month before entering the Charité the patient kept his bed ; from the onset of his illness, and during its progress, leeches had been applied several times to the epigastrium, without any relief being experienced from them. This group of symptoms seemed to indicate a chronic affection of the stomach ; the following are the additional symptoms which we observed :— nothing remarkable in the tongue except its extreme paleness ; no bad taste in the mouth. The epigastrium was soft, free from pain as well as the rest of the abdomen ; the patient for a long time back took nothing but milk for nourishment, and he found it agree with him very well. The stools were scanty, and of a very remarkable appearance ; they were whitish, totally devoid of colour, as in jaundiced patients, still neither the skin nor conjunctivæ presented any trace of jaundice. But the urine which was voided in considerable quantity, was of a very remarkable orange colour, such as is observed in jaundice ; in a word, the patient sweated often from the head, and the linen which came in contact with this sweat was coloured yellow. The pulse was ordinarily a little frequent, without the skin being hot. The emaciation was considerable. We considered this patient as labouring under chronic gastritis, and further, from the nature of the stools, the urine, and the sweat, we thought that the affection of the stomach was complicated with some lesion of the liver.

During the two months the patient remained in the Charité—at the end of which time he died without a struggle, in a state of great exhaustion—the symptoms which he presented on his admission did not change, and we merely observed him to become emaciated and continually more feeble. The milk which he took at first willingly enough, soon became disagreeable to him ; he had the most complete distaste for all sorts of food. He asked for wine so eagerly that it was given to him, nor did this liquid render the gastric symptoms worse. Such is not the usual case of persons labouring under chronic inflammation of the stomach—a disease, however, which did not exist here, as we shall see. The treatment consisted in the application of a blister to the epigastrium, and simple emollients internally.

Post mortem. The inner surface of the stomach was in general white, except in some points where, in the submucous cellular tissue, veins of considerable size were seen to pass ; but in the mucous membrane itself no vessel was injected. This membrane was every where of its natural thickness and consistence. Neither did we find any appreciable lesion in the duodenum, nor in the rest of the digestive tube. The liver was then examined ; when viewed externally it presented a pale colour. When drawn gently out of its place it was torn ; and on pressing it with the finger it was found to become reduced into a sort of greyish pap. In all its points it presented the colour of dead leaf, and whether by incision or by pressure we could scarcely force a few drops of blood from it. It did not grease the scalpel, and had an appearance altogether different from that of fat livers. In the gall-bladder nothing was found in the place of bile, but a colourless serous liquid, which on being tasted did not appear to be bitter. Nothing remarkable in the bile ducts, which were all empty of bile.

This case appears remarkable in more respects than one. It presents an instance of a long-standing disturbance of the digestive functions, without any appreciable change in the structure of the stomach, duodenum, or the rest of the intestinal tube. In many other individuals, where there had been no other symptoms, we found, however, in the stomach the most serious organic changes. Was there then in this case mere alteration of the functions of the stomach, without lesion of its texture. We think that we must seek elsewhere the cause of the disturbance of the digestion, and consequently of the progressive emaciation, debility, etc. Was not this cause the want of any bile flowing into the duodenum? is it with impunity that the chyme, which comes into this intestine in order to be changed into a nutritive juice, is now no longer mixed with bile? can healthy or real chyle be then formed? certainly, in the present state of science, such questions may be at least raised. Thence the feeling of weight experienced by the patient five or six hours after having taken some food, that is, nearly about the time when the latter should pass the pylorus. Thence the loss of appetite which here was not connected either with a state of irritation or of debility of the stomach, but which depended on the general bad state of the nutritive functions; appetite was gone, because nutrition itself evinced a tendency to go; the chyle no longer forming, there was no longer any [chymefaction, a striking instance among many others of the close connexions by which all the vital acts are united and correspond.

If we now inquire what was the cause which prevented the bile from entering the duodenum, we shall find that it ceased to enter it (as the appearance of the fæces sufficiently proved during life) not because an obstacle in the biliary passages prevented its free excretion, but because the liver really no longer formed any. Accordingly none was found in the vessels scattered through the interior of this organ, and in the gall-bladder nothing could resemble bile less than the liquid contained in it. Thus then there seemed to have been in this case an absence of the biliary secretion. The yellow matter of the bile was separated from the blood by other excretory passages, by the kidneys, and by the exhalants of the cutaneous surface. But was the blood duly depurated in this way, and was not this a new cause of an alteration in the functions of nutrition?

We shall consider it then as a fact demonstrated by experience, that in the cases of softening of the liver, similar to that described in this instance, the secretion of the bile may be suspended, or at least very much diminished.

With respect to the cause and nature of this softening, was it a result of chronic inflammation? this may be maintained, but cannot be strictly demonstrated, and for our part we are ready to own that we entertain some doubts on the matter.

ON INDURATION OF THE LIVER.

Case 10.—*Red induration of the liver—Ascites—No other symptoms indicating an affection of the liver.*

A lapidary, thirty-three years of age, had always enjoyed tolerably good health, till the May of 1821. At this period, and without having previously caught cold, he had a profuse hemoptysis, which lasted for ten days; he continued to cough till the end of June. At this time the symptoms referable to the chest ceased, the cough and slight dyspnœa which accompanied it disappeared; but other symptoms appeared on the part of the abdomen. A pain, not severe but habitual, was felt towards the right hypochondrium; (the patient could not describe its situation more precisely;) the food was several times vomited; slight purging came on, and now ceased only at intervals; however, he did not keep his bed, and continued his usual business. During the three following months, these symptoms still went on, his flesh and strength progressively diminished. We could not ascertain whether the pain of the hypochondrium had preceded or followed the first appearance of the vomiting and diarrhœa. During the months of October and November, at the same time that the face and extremities became more and more emaciated, the abdomen swelled, and ascites soon became manifest. He entered the Charité towards the commencement of December, and presented the following state:—

Countenance pale, expressive of great suffering, great debility, considerable emaciation of the extremities. Abdomen very much distended by a liquid which, when percussion is employed, evinces evident fluctuation; there is no pain in any part; some purging (five or six liquid stools in twenty-four hours). Appearance of the tongue natural. Appetite still preserved; no fever; skin very dry; respiration free; auscultation and percussion indicate no morbid state of the thoracic organs.

What was the cause of the ascites in this case? No organic lesion, as far as we could ascertain, could explain it. All that we could learn was the existence of chronic inflammation of the lower part of the digestive tube.

On the day after the patient's admission, paracentesis was performed. A bucket of limpid serum was drawn from the abdomen. Desirous of arousing the action of the kidneys, in order to prevent the peritoneal collection from forming, M. Lerminier prescribed the usual diuretic preparations, also frictions on the inside of the thighs with tincture of digitalis. For the twelve days following no change of any moment occurred in the state of the patient. M. Lerminier then prescribed a mixture, consisting of an ounce of castor oil, half an ounce of syrup of buckthorn, and two drachms of mint. Very copious serous stools were obtained, accompanied with severe colicky pains. Twenty days after the paracentesis, the ascites was much greater than it was at the period when the operation was performed. The features were changed; the prostration was extreme; the tongue retained its moist state, and was not red. At the commencement of January it began to become brown in the centre, without being red at the edges; the pulse continually became weaker, and the patient died without a struggle. The extremities had never been infiltrated.

Post mortem.—An enormous quantity of limpid serum escaped through the abdominal parietes when cut into. No flocculi were observed to float in it, and there was no indication in the abdomen of any previous or present inflammation of the peritoneum. We were struck with the feeling of density which the liver presented externally to the mere touch; though its size was not at all increased, it was much heavier than usual. It had a uniform red colour; it could not be torn without considerable difficulty; and with respect to its colour, its smooth section, and the aggregate of its physical properties, one could not compare one of its slices to any thing better than to a slice of lean ham. The stomach was pale throughout its internal surface; its mucous membrane was so soft and thin towards the great cul-de-sac, that in several points nothing was found but the submucous cellular tissue lined by a liquid and whitish pulp. The duodenum and rest of the small intestine presented no appreciable lesion, except here and there some partial injections of the mucous membrane. The cæcum presented over its entire surface a brownish tint, and considerable development of its follicles. The mucous membrane of the colon was white throughout; but in several points it was perceptibly softened. The brownish colour reappeared in the rectum. Nothing else was found worth noticing, except that the lateral ventricles were distended with a considerable quantity of serum. The heart and lungs were quite healthy.

We find in this case an alteration in the texture of the liver different from any observed in the preceding cases. Its parenchyma was considerably indurated, and its density increased; its colour was of a deeper red than that of the liver in its healthy state. To discover this affection we find no characteristic symptom; but here a new morbid phenomenon presents itself, which we have not seen hitherto; namely, ascites. As it was evidently independent of disease of the heart, and as there was nothing to indicate that there had been peritonitis in the case, one might suspect that it must depend on an affection of the liver; but of this there was no certainty. The increased consistence of this organ probably opposed the free circulation of the venous blood within it. There was here then obstruction of the liver, a very vague term, very properly banished from scientific language, but one which nevertheless expresses a real fact. There was no derangement, at least perceptible to us, of the biliary secretion.

The period when this disease of the liver commenced it is not easy to determine. Was its commencement announced by the pain felt in the right hypochondrium, when the symptoms of pulmonary irritation were succeeded by other symptoms of gastro-intestinal irritation?

The white softening of the gastric mucous membrane did not prevent the tongue from constantly retaining a natural state, except for the last few days before the patient's death, when it became brown. There had been some vomiting at the commencement of the disease. But at a later period the gastric symptoms were very little marked. To account for the chronic diarrhœa nothing was found, but a brown colouring of the cæcum and rectum, and a little white softening, similar to that of the stomach, in the mucous membrance of the colon.

One may see in this case, an instance of the effect produced by repeated purgatives and other irritants administered to a person who had ascites, and whose intestinal mucous membrane was already in a state of irritation. On this point I shall make but one remark; namely, that those stimulants applied to a mucous membrane already diseased never produced fever.

We may remark the very healthy state in which the lungs were found in a person, who for several months before had had hemoptysis followed by cough. This is another fact which proves the possibility of the production of hemoptysis without the existence of previous tubercles. What was also very remarkable here was the sudden disappearance of the thoracic symptoms at the same time that the abdominal viscera began to be affected.

CASE 11.—*Red induration of the liver, with development of granulations at its circumference and in its interior—Jaundice and ascites—Tumour produced by the left lobe of the liver—Supposed cause: mental emotion.*

A cab-driver, forty-nine years of age, of a strong constitution, who had indulged in alcoholic liquors to a great excess, enjoyed good health up to the end of June, at which time he had a violent dispute with some of his comrades, after which he became yellow. He entered an hospital, and after remaining in it for thirty-six days, he left it with a very slight yellow tint still remaining. The jaundice soon reappeared. From the 20th to the 30th of August the abdomen began to swell. In September the ascites increased, and the lower extremities then became infiltrated, and towards the 20th of September the dropsy extended to the scrotum.

On the 5th of October he entered the Charité. At this time the entire cutaneous surface was of a greenish yellow tinge; the abdomen was very much swollen, and there was evident fluctuation in it; no pain had ever been felt there. The lower extremities, scrotum, and penis were infiltrated; the respiration was impeded, arising from the compression of the diaphragm by the peritoneal liquid. The thoracic organs were found on examination quite healthy; pulse small, a little frequent; skin not hot; urine scanty and of a saffron colour; the tongue was moist and whitish; appetite none; very little thirst; only one stool in the twenty-four hours, which was of good consistence, and presenting the colour of ashes. Great debility. Every thing here seemed to show that the dropsy depended on the disease of the liver. M. Lerminier endeavoured to combat this by establishing a double revulsion on the kidneys and intestinal mucous membrane, in order to which he prescribed the usual diuretic medicines. October 8th, the infiltration of the scrotum had diminished; but the peritoneal collection was still increased; it produced considerable embarrassment in the respiration. Paracentesis was performed, and a transparent lemon-coloured fluid escaped. The collapse of the abdominal parietes, immediately after the operation, allowed us to detect the existence of a tumour to the left of the xiphoid cartilage, which could not be exactly circumscribed, and which seemed to belong to the left lobe of the liver. The same treatment was continued, and, the 9th, the infiltration of the lower extremities was diminished considerably; on the 10th we observed a continual tendency to stupor; during the night a profuse diarrhœa set in. On the morning of the 11th there was great prostration; tongue brown at its centre, and pulse very frequent; the entire day coma was observable, and considerable diarrhœa. On the 12th the breathing was very much hurried; tongue dry, black at its centre; pulse thready. 13th, face pale and very much changed. Sinapisms to different parts of the extremities; decoction of seneka, with some drops of liquid ammonia; æther. He died shortly after the visit.

Post mortem.—Some infiltration of the lower extremities; deep yellow colour of the entire skin. Trifling quantity of limpid and yellow serum in the cavity of the peritoneum. The right lobe of the liver did not go beyond the edge of the ribs. The left lobe, on the contrary, occupied below and to the left of the xiphoid cartilage, a space as broad as the breadth of two fingers; it did not extend into the left hypochondrium. The tissue of the liver was brownish; externally it was marked with a number of granulations, which were also found in the interior of the organ. The gall-bladder was filled with a very thick bile.

The internal surface of the stomach presented a slate-coloured tint over a great portion of its extent. In the cranium the dura mater was found to be of a yellow colour; a small quantity of yellow serum in the ventricles. In the chest, the cavity of the two pleuræ, and that of the pericardium, some spoonsful of yellow serum. Some liquid black blood in the cavities of the heart. The thoracic duct contained some yellow fluid. The costal cartilages were also coloured yellow.

The liver here presented four species of alteration combined: 1st, change in its colour; 2ndly, partial increase in its size (in the left lobe); 3rdly, increase in its density and consistence; 4thly, development of granulations on its circumference and in its interior.

As symptoms of these changes, we find: 1st, a small tumour, which from its seat might be readily taken for a tumour connected with the stomach; 2ndly, jaundice; 3rdly, dropsy, which commenced at the peritoneum, and then extended to the extremities, a course different from that of dropsies which depend on a disease of the heart.

There was no pain felt at any period of this disease. The jaundice was the first symptom which appeared. The patient had not yet remarked any derangement in his health, when a strong mental excitement gave rise to jaundice. But whilst the majority of jaundices arising from a similar cause have in general nothing alarming in them, and disappear after some time, without leaving any bad traces after them; here, on the contrary, the jaundice was in a manner only the first signal of a change in the intimate texture of the liver. Was the first impression made on the duodenum, which transmitted its irritation to the liver? Was there first inflammation of the bile ducts, and an obstacle, by reason of the swelling of their mucous membrane, to the flowing of the bile into the duodenum. Did this intestine, as also the ductus hepaticus and ductus choledochus, remain in their healthy state? And does not the mental excitement act rather by directly influencing the nerves of the liver, which, being modified in their action, alter the biliary secretion and prevent it from being duly performed? Hence the materials of the bile tarry in the blood, and jaundice is produced. All these questions may be discussed; but what should not be forgotten is, that the post-mortem examination did not point out in the ductus hepaticus and choledochus any mechanical cause which could prevent the bile from coming into the duodenum; besides, the liver still secreted a certain quantity of it, for the ducts were tinged with it, and some was found in the gall-bladder; but it was remarkable for its deep black colour. Thus these is in this respect a great difference between this case and those previously cited, where, even in the bile ducts, nothing was found but a little mucus.

The state of the intestines is well worthy of remark. Their mucous membrane had been frequently irritated by different purgatives, and still it was found white; thus these medicines had occasioned only a temporary congestion. Compare this case with those where, after a purgative or emetic given once, intense inflammation of the digestive tube is produced with sympathetic reaction on other organs, the production of adynamic or ataxic symptoms, &c., and try after this to lay down fixed rules for the administration of medicines. It is not less important for the physician to know the degree of sensibility or irritability of the intestinal mucous membrane, than to know on the other hand that there are cases, where, though stimulants of a more or less active nature be brought in contact with it, it is still actually impossible to produce in it a state of inflammation. We may refer to other cases also, where the employment of purgatives has not only not been injurious, but in which their employment has been actually attended with beneficial results. Why do we dwell on these facts? Precisely because the medical doctrines of the present day divert the attention of practitioners from them, and it is useful to know them even in a physiological point of view.

We perceive, moreover, that profuse diarrhœa took place here during the last few days preceding death, without there being any lesion of the intestinal mucous membrane, as far as we could ascertain, to account for it.

The alteration of the stomach consisted merely in a change of the colour of the mucous membrane: there was not during life any other sign of gastric affection except loss of appetite; but we have already seen that this may be conceived (Case 11) to be independent of a morbid state of the stomach, though it is perfectly true that it most frequently depends on it.

The operation of paracentesis was attended by a remarkable decrease in the infiltration of the lower extremities; but this decrease of dropsy was not followed by any useful result; it was, on the contrary, from this period that adynamic symptoms appeared, and the patient fell into a state of coma, in which he died.

SECTION II.

ALTERATION IN THE NUTRITION OF THE LIVER, WITH DIMINUTION OF ITS SIZE (ATROPHY).

Case 12.—*Atrophy of the liver—Cellulo-fibrous appearance of its tissue—Chronic gastro-enteritis.*

A steel-polisher, thirty-six years of age, entered the Charité January 27. After severe domestic trials, he quitted Versailles, where he lived, and come to reside in Paris in a narrow damp street. Till then he had enjoyed good health; only that sixteen years before he had had an affection of the chest, and he was subject to hemorrhoids from his youth. A little time after coming to Paris he lost his appetite; the introduction of food into the stomach was sometimes painful; it was vomited occasionally, and at intervals purging supervened; when it ceased obstinate constipation followed. This person, who till then was rather fat, became rapidly emaciated. Eighteen months after these symptoms connected with the digestive organs commenced, he perceived at the same time that his face and extremities became more and more emaciated; his abdomen, on the contrary, increased in size, without however any pain being felt in the part.

When we saw this patient, there was considerable effusion into the abdomen, which occasioned manifest fluctuation. The lower extremities were infiltrated, (the patient assured us that the œdema of the extremities did not appear till long after the abdomen began to swell.) The abdomen when pressed in different parts did not appear painful; the face was pale and thin; the tongue was covered with a yellowish coat, without any redness; acid eructations frequently took place; the taking of any solid food or wine into the stomach was followed by an acute pain in the epigastrium; appetite was gone; the patient complained chiefly of having an insurmountable disrelish for bread; he lived for a long time on milk and vegetables. Since the last month the diarrhœa had been constant; from eight to ten stools, consisting of a liquid matter resembling yellowish water, occurred every day; the pulse was a little frequent without the skin being hot; the urine was scanty, of a brownish red colour, and loaded with sediment. There was no trace of jaundice, and the colour of the alvine evacuations proved that the bile flowed into the duodenum.

The existence of chronic gastro-enterite was manifest; it performed, no doubt, a considerable part in the progressive emaciation of the patient. With respect to the cause of the dropsy, it escaped our investigation; but it appeared to be connected with an affection of the liver.

During the two following months we saw this individual become more and more emaciated; the dropsy remained stationary. Whenever we attempted to combat it by diuretics we were obliged to desist, in consequence of these medicines producing no other effect but that of increasing the gastro-intestinal irritation. Friction, with tincture of digitalis, proved ineffectual, as did friction with mercury over the abdomen. Ultimately the tongue became red and dry; the diarrhœa, which had never ceased, became more profuse; delirium set in, and the patient died.

Post mortem. Face and upper extremities very much emaciated; infiltration of the lower extremities, scrotum, penis, and abdominal parietes; limpid serum, a little greenish, accumulated in great quantity in the peritoneum; the intestinal convolutions floating in the midst of this serum, and, as it were, washed by it. No trace of inflammation in the serous membrane.

The liver was remarkable for its extremely small size. The left lobe consisted merely of a thin tongue superadded to the right lobe. The latter is itself much less than usual. Externally it presents a greyish-green colour. It offers unusual resistance when cut into; in some parts it actually creaks under the scalpel. Scarcely any trace of the two substances of the liver, as they are ordinarily found, were to be seen, but merely a whitish tissue, very dense, of a cellulo-fibrous appearance, which seemed very slightly vascular. In the ductus hepaticus and ductus choledochus, as also in the gall-bladder, we found some yellow bile, not at all thick. The parietes of the gall-bladder were infiltrated.

The stomach presented in its two portions different alterations. Towards the great cul-de-sac (splenic portion) the mucous membrane was very much injected (dotted appearance), without being either perceptibly softened or thickened. In the pyloric portion the mucous membrane was of a brownish tint; it was wrinkled, uneven, considerably thickened, and difficult to tear; beneath it, near the pylorus, we found the cellular tissue more dense, and thicker than usual. The internal surface of the duodenum presented a brownish tint, similar to that of the stomach. In the lower fifth of the ileum, as also in the cæcum, and ascending colon, numerous ulcerations were found, the ancient date of which was proved by the thickening and brownish colour of the cellular tissue which constituted the bottom of them. Between them the mucous membrane was considerably injected. This injection existed without any ulceration in the tranverse colon, and as far as the rectum. The heart was empty, flaccid, and devoid of colour. A considerable quantity of serum was found in the cerebral ventricles, and at the base of the brain.

Here again was a serious alteration of the liver, the formation of which was not announced by any characteristic symptom. What was its point of departure? Did it precede or follow gastro-intestinal inflammation? had the mental vexations experienced by the patient any influence on its development? was this atrophy of the liver, this change of its natural parenchyma into as it were a cellulo-fibrous tissue; were these alterations of nutrition referable to an inflammatory process? are they not rather the result of an entirely opposite state? is there not some analogy between this liver diminished in size, and the natural parenchyma of which tends to become changed into a cellular and fibrous web, and those organs which, when they become atrophied, leave nothing behind them but cellular tissue, or fibrous cords? (Thymus gland, arteries and veins, etc.)

This liver, thus atrophied, hardened, and changed in its texture, no longer allowed a free passage to the blood of the vena portæ; thence the production of ascites, and afterwards that of œdema of the lower extremities.

However, changed as it was, and deprived of a part of the vessels, which appeared to be obliterated, this liver still secreted bile, and no jaundice ever took place. In the following case, where we shall find an alteration of the liver precisely similar, we shall detect on the contrary the existence of jaundice. Thus, the further we advance, the more we see proofs of this assertion increased, namely, that the production of jaundice depends on other conditions than the nature of the change in the liver.

The redness and dryness of the tongue which supervened towards the termination, the increase of the intestinal flux, the prostration which accompanied these symptoms, depended no doubt on an exasperation of the old inflammations of the digestive passages; the redness, without softening, of the splenic portion of the stomach, was probably the organic lesion which corresponded with this exasperation. It is probable that in many cases the stomach may thus become congested without serious symptoms resulting from it; but, occurring in an individual already much debilitated, this congestion soon terminated fatally.

So true is it that as a general principle it is not on the intensity of the lesions that the severity of the symptoms depends, but rather on the disposition in which these lesions find the individuals in whom they occur.

CASE 13.—*Atrophy of the liver, with cellulo-fibrous appearance of its tissue—Dropsy—Jaundice—Healthy state of the digestive tube—Gangrenous erysipelas of an extremity.*

A jockey, fifty-two years old, had an ascites and considerable infiltration of the lower extremities when he entered the Charité; moreover the conjunctivæ and the entire cutaneous surface presented a greenish-yellow tint. He stated that for several years back he had been dropsical and jaundiced. He had been losing his strength and flesh for some time, without his appetite being ever diminished, when he perceived his abdomen increased in size, nearly at the same time he began to become yellow. He assured us he had never felt any pain or uneasiness in the region of the liver; the abdomen, when examined with the hand, was not painful in any part; no tumour was detected in it; the tongue presented its natural appearance; the appetite was retained; the introduction of food into the stomach did not occasion any local or general indisposition; the stools were scanty, but coloured as in a person in perfect health; the pulse was free from frequency. The patient was in very good spirits. A few days after his admission paracentesis was performed; during the three weeks following it was twice repeated; but each time the peritoneal liquid was reproduced with astonishing rapidity. Different diuretics were ordered, but without any increase in the urinary secretion following their employment. Still the patient became weak, and his appetite declined, when after scarifications being made on the two lower extremities, which were in a state of considerable œdema, a livid redness attacked the skin of the right leg; on the third day of the appearance of this redness, the skin which was the seat of it became gangrenous; at the same time rapid prostration set in. Death took place six days after the appearance of erysipelas.

Post mortem. The liver and its appendages were so very like what was described in the preceding case (Case 12), that, to avoid repetition, we refer to that description. A great quantity of limpid serum was found in the peritoneum, without any trace of peritonitis.

This case, in which we find an alteration of the liver precisely similar to that described in the Twelfth Case, which, like the latter, presents total absence of pain in the region of the liver, and the production of dropsy, differs from it, 1°, in the existence of the jaundice, which supervened, though during life the bile seemed to flow into the duodenum, as was proved by the nature of the stools; 2°, this case differs again from the preceding in the absence of all symptoms of gastro-enterite, and in the very healthy state in which the digestive tube was found after death.

The gradual debility of the patient seemed to be the twofold result both of the affection of the liver and of the loss of serum sustained by the patient, the ascites being very rapidly reproduced after each of the three operations, which were performed successively in a very short space of time. These operations of paracentesis were really attended then with injurious effects; for without them the blood would have lost less serum. We see here again that diuretics proved ineffectual. It may be readily conceived that they might have more influence if the object was to replace one active secretion by another. But here it was necessary to be able to remove the mechanical obstacle, which, by preventing the blood from freely traversing the liver, forced the thinnest part of this fluid to transude through the venous capillaries.

Death was evidently the result of the gangrenous erysipelas which attacked the skin of one of the legs after the scarification. Surely the termination of this erysipelas in gangrene will not be here attributed to an excess of inflammation.

CASE 14.—*Granulated state of the liver, with increase in its density and diminution in its size—Dropsy—Absence of jaundice and of pain—Gastro-intestinal inflammation.*

A man, sixty-seven years of age, who had indulged all his life in the excessive abuse of ardent spirits, beheld his house pillaged in 1814, and his fortune destroyed. Being thus reduced to a state bordering on beggary, he had the additional misfortune to lose several of his children; however, his health remained good till towards the middle of May, 1821. He then perceived that the parts around the ankles became œdematous. This œdema increased up to the month of June, at which time the patient, feeling himself very weak, no longer left his bed-room. The dropsy extended gradually to the thighs and abdomen; the breathing always remained free; he never had had any abdominal pain. Towards the end of October the distension of the abdomen was enormous; paracentesis was then performed; he entered the Charité on the 19th of December, and then presented the following state:—emaciation of the face and extremities, evident fluctuation in the abdomen, which is very much swollen, and also free from pain; lower extremities considerably swollen; the skin of the right leg of a livid red colour, and presented numerous fissures, through which a considerable quantity of serum flowed spontaneously. The breathing, which till then was free, has recently become embarrassed (probably occasioned by the pressure on the diaphragm by the serum in the peritoneum). Slight cough; percussion and auscultation do not detect in the thoracic organs any appreciable lesions except some moist bronchial râle in different points, more especially on the left, posteriorly. Pulse very small, frequent, and presenting great irregularity with respect to the strength and return of the pulsations; tongue moist, and of a bright red; thirst moderate; sufficient appetite; stools natural; urine scanty, but limpid. (Diuretic mixture, calomel and soap pills.)

On the 22nd paracentesis was performed. A bucket of limpid serum was drawn off. Notwithstanding the collapsed state of the abdominal parietes, we could discover no tumour either in the right hypochondrium or elsewhere.

From the 22nd to the 25th the patient stated that he found himself very well; but on the morning of the latter day a considerable change took place with respect to the state of the digestive passages. He now felt an utter dislike for food; the tongue was dry and brown; several liquid stools had taken place; the frequency of the pulse was very much increased, being 130 per minute. The same medicines were continued. On the twenty-sixth the features were altered; great prostration was now observed; dryness and brown colour of the tongue increased; very painful tenesmus; stools slimy and bloody; pulse scarcely perceptible, and remarkably irregular; urine red and turbid. Reappearance of the ascites (anodyne and demulcent lavement, leeches to the anus, mucilaginous ptisan). No change from the 26th to the 30th. On the 30th the abdomen was as large as it was before paracentesis was performed: the operation was again resorted to, after which the patient found some temporary relief; but the day after the prostration was greater than ever. The face was very much emaciated; the patient felt convinced of approaching dissolution. He had constant vomiting during the day. In three days more diarrhœa set in; the pulse became still weaker, the vomiting continued, and the patient died without evincing the least disturbance of the intellectual functions.

Post mortem.—Great marasmus of the face and upper extremities; considerable infiltration of the thighs and legs; ascites.

Liver extremely small, occupying but a small portion of the right hypochondrium, and of a brownish colour. When viewed externally, it appeared as if contracted and shrivelled. When cut into, it presented a very dense tissue. Instead of presenting its usual red colour, separated into areolæ by numerous lines or white circumvolutions, it seemed merely to consist of an infinite number of granulations, of a brownish-green colour, of the size of a grain of millet, pressed one upon another; but little blood flowed from it when cut into. A very small quantity of colourless bile, appearing to consist merely of water, albumen, and a little yellow colouring matter, was contained in the gall-bladder. Nothing remarkable in the biliary ducts.

The inner surface of the stomach, which was distended with liquids, presented an almost uniform redness from the cardia to the vicinity of the pylorus; the seat of this redness was the mucous membrane, which, being a little thickened, still retained its ordinary consistence. The whiteness of the small intestine formed a striking contrast to the redness of the stomach; only to the extent of a foot above the cæcum there appeared on the internal surface some small, reddish, rounded bodies, which seemed to be mucous cryptæ in a state of inflammation. A blackish colour and evident thickening of the mucous membrane of the cæcum and of the ascending colon. The transverse colon was white; there was a redness like wine-lees on the internal surface of the rest of the large intestine, as far as its anal extremity. This redness was seated entirely in the mucous membrane, which was three times its natural thickness; its consistence also was perceptibly increased. A considerable quantity of liquid black blood filled the four cavities of the heart, which in other respects was healthy; neither was there any appreciable alteration in the large vessels which proceed from this organ or enter it. General redness of the bronchi; a frothy colourless serum flowed from the pulmonary parenchyma when cut into. *Cranium.*—Considerable serous infiltration of the sub-arachnoid cellular tissue on the convexity of the hemispheres. The central substance was remarkably soft (the body was opened seventeen hours after death). One would have said that this substance was, as it were, infiltrated with liquid. From the middle of the internal surface of the corpus striatum of the right side, a small, whitish, friable body arose, about the size of a common pea, which was depressed to the depth of one or two lines in the grey substance of the corpus striatum, which was perfectly healthy around it.

We have here a remarkable instance of that peculiar alteration of the liver which has been designated a granulated state of that organ—a state which had been already observed by Morgagni in several dropsical patients, and which seems to us not to have sufficiently engaged the attention of modern observers. Here this granulated state had acquired, if we may so say, its maximum of development. The entire parenchyma of the liver really consisted merely of granulations collected and grouped one upon the other. Still there was not one visible on the outside of the organ. It was diminished in size, and seemed atrophied ; but, as we have already endeavoured to explain above, the atrophy affected only one of the anatomical elements of the liver, whilst one or several of its elements seemed to be hypertrophied, from whence arose the appearance of these numberless granulations.

If we now direct our attention to the causes which might exert some influence on this remarkable alteration of the liver, we shall find them to be the abuse of spirituous liquors, and great mental distress, occurring at a time when the nervous system, changed from its normal state, has a peculiar tendency to modify the digestive apparatus and its appendages in their organisation, functions, and vital properties. There is no proof that in this case the affection of the liver was preceded by an acute or chronic affection of the digestive tube. The commencement of the disease of the liver was very obscure ; it was not announced by any pain, by any tumefaction of the hypochondrium, or any trace of jaundice ; the only thing observed was, that the patient's strength diminished, he lost flesh, and, after these phenomena alone denoted for a certain time that an important organ was affected, traces of dropsy appeared. The course of the latter disease was not that usually observed in diseases of the liver. Commencing at the interior part of the lower extremities, extending progressively, and from below upwards, to the legs, and then to the thighs, attacking the peritoneum only consecutively, would not one have said that it depended on organic disease of the heart ? A new phenomenon further contributed to mislead one with respect to the real seat of the disease, namely, the great irregularity of the pulse ; and still the heart was free from all organic disease, the cause of the dropsy being seated in the liver. So true is it that in medicine the most general rules have almost always their exceptions.

At the time the patient entered the hospital the digestive functions did not yet appear to have undergone any perceptible change ; at a later period symptoms of gastro-intestinal irritation were observed to appear : as in the majority of those cases where the latter supervenes at an advanced period of chronic diseases, it rapidly gave rise to that group of symptoms which constitute one of the varieties of what is called adynamic fever. There were here well-marked dysenteric symptoms, and the autopsy detected the existence of a very serious inflammatory alteration of the termination of the colon and rectum. The small tubercle implanted in the corpus striatum, the existence of which was not indicated during life by any symptoms, is deserving of notice.

ARTICLE III.

OBSERVATIONS WITH RESPECT TO ACCIDENTAL PRODUCTIONS ARISING IN THE LIVER.

By this term we designate every solid or liquid substance formed accidentally in the midst of the parenchyma of the liver, such as fatty matter, pus, tubercle, cancerous substance, serous cysts, and hydatids.

Of these several products some most commonly appear in the liver only after an evident process of inflammation; others are not in all cases so evidently preceded by this process; whilst in others there is no proof that inflammation ever existed.

We shall now cite a certain number of cases calculated to point out the more or less characteristic symptoms occasioned by several of these productions.

We shall first speak of abscesses of the liver, on which M. Louis has recently published some very interesting observations, the principal results of which agree with those to which our own observations shall lead.

SECTION I.

CASES OF ABSCESSES OF THE LIVER.

Case 15.—*Febrile jaundice—Painful tumefaction of the right hypochondrium—Purulent depositions scattered through the liver, with redness and softening of its tissue around them—Healthy state of all the other organs.*

A woman, twenty-nine years of age, felt, seven days before entering the hospital, general indisposition, lassitude, then a shivering, which lasted for about two hours, and was followed by an intense heat, which continued. During the first two days no symptom characteristic of the suffering of any particular organ was observed. On the third day she felt pain in the liver and right side of the chest. On the fourth and fifth day this pain continued, and extended into the right hypochondrium. On the sixth day she began to become yellow; on the seventh her state was as follows:

Yellow tint of the conjunctivæ and face, which was less marked on the skin of the rest of the body; pains in the limbs; fixed pain in the site of the last ribs of the right side, and below them; right hypochondrium tense, and painful on pressure. We thought we discovered an ill-defined tumour in this part, to the extent of two or three inches below the edge of the ribs; tongue whitish, without any redness; no thirst, nor appetite; epigastrium soft, and free from pain; stools scanty, solid, and yellowish; urine small in quantity, of an orange colour; pulse frequent and hard; skin very hot and dry. She feels difficulty in changing her position; intellects dull. She complains of being very weak. The painful tumefaction of the right hypochondrium, the jaundice, and accompanying fever, seemed to indicate the presence of acute hepatitis. There was no proof that the digestive passages were affected at the same time. (Twenty-four leeches to the anus; ptisan diet.)

On the 8th and 9th day all the symptoms worse. Eyes dull and devoid of expression; the mouth remained half open; answers slow, difficult, and inaccurate; she put out her tongue, and forgot it between the lips. The entire skin very yellow; the pulse still frequent and hard; the pain and tumefaction of the hypochondrium continued.

On the 11th and 12th days all the symptoms of ataxic fever were observed; patient comatose; pupils very much dilated, and fixed; it is not entirely certain that she retains the faculty of seeing. When the skin of the extremities is pinched, she retracts them quickly. Skin continually hot and dry, and very yellow; pulse very frequent, and irregular with respect to its strength. Tongue dry, and not red. (The dryness may depend on the open state of the mouth.) Fifteen leeches behind each ear, blisters to the thighs, &c.

On the 13th day; symptoms the same, abdomen tympanitic; constipation; involuntary discharge of urine. (Lavement with the addition of half a drachm of sulphate of quinine.) On the 14th day all the symptoms still worse. She died during the night.

Post mortem. The entire cutaneous surface of a deep yellow colour. Considerable embonpoint. On feeling the right hypochondrium, we circumscribed the sharp edge of the liver two fingers' breadth below the edge of the ribs. Abdomen very tympanitic.

On raising the abdominal parietes we perceived the liver pass some inches below the edge of the ribs; it did not extend into the left hypochondrium. Externally it was of a bright red colour, and on three points of its convex surface we distinguished small spots of a yellowish white colour. On cutting into each of these spots, we penetrated into a small abscess which might contain a filbert.

In the interior of the liver from seven to eight purulent collections were scattered, the largest of which might have held a filbert, as the three preceding, the smallest of which seemed to consist merely of a drop of pus. The parietes of the cavities in which the pus was lodged were lined merely by a thin membranous layer, not organised. The hepatic parenchyma was of a bright red colour in every part, and was evidently softened. A great quantity of blood flowed from it, when cut into.

The large intestine, and several convolutions of the small intestine, were distended with gas. In the chest the heart was found filled with fibrinous coagula of great consistence, deprived in a great measure of colouring matter. Some stony concretions in the bronchial glands. In the cranium there was considerable injection of the subarachnoid cellular tissue; the cortical substance was of a rose colour; some red points were observed in the white substance. There was about a spoonful of limpid serum in each lateral ventricle.

This case of abscess of the liver is the only one we have had an opportunity of observing unaccompanied by a lesion of other organs. The hepatitis lasted fifteen days at most, and was, consequently, acute in its nature: the pus was not collected in the liver into one single abscess; but several small abscesses were found in this organ, some on its surface, others in its substance. M. Louis has seen a similar phenomenon; but, in the cases observed by him, there was around the pus a false membrane, much more developed than that which we found here. In this case, as in those cited by M. Louis, the parenchyma of the liver was red and softened, not only around each abscess, but over the entire of the organ. The pus had not that colour of wine-lees which is said to belong to pus in the liver. It was of a greenish white colour, and creamy, like healthy pus secreted in inflamed cellular tissue.

At the onset of the disease there was observed merely that general state which exists at the commencement of most acute affections: then the symptoms of hepatitis became developed; its existence was indicated chiefly by four phenomena: pain in the right side of the chest, tumefaction of the hypochondrium, jaundice, and fever. Any one of these signs, even the jaundice itself, taken separately, would have had but little value ; but their combination attached considerable certainty to the diagnosis. The nature of the stools, the examination of the body, also concurred in proving that the jaundice was not here dependent on an obstacle to the course of the bile, and that the latter freely entered the duodenum. Pain preceded the appearance of the jaundice.

These symptoms alone would not have occasioned death in so short a time. But the affection of the liver reacted on the brain, and the irritation of this organ, which was altogether sympathetic, produced the most serious results ; that group of symptoms was then observed which characterise ataxic fever ; the brain affection was the cause of death.

The *post-mortem* examination presented a perfectly healthy state of the digestive tube. Thus, in this case, the ataxic fever had its point of departure solely in the liver ; and, besides, the affection of the latter organ was wholly independent of disease of the digestive passages. It might be said, to be sure, that at the onset there was gastro-enteritis, and that on this depended the general state of the patient during the first days of the disease, and that the inflammation, attacking the liver, left the intestine ; but this is mere hypothesis.

We may remark that the meteorism observed in this individual, towards the termination of life, was independent of an inflammatory state of the parts of the intestine where it was seated.

CASE 16.—*Abscess of the liver with redness and softening of its tissue—Painful tumour of the right hypochondrium, supervening during the progress of a chronic gastro-enterite—No jaundice.*

A man, thirty-nine years of age, experienced for the last three years nearly all the symptoms of a chronic gastro-enterite. At first his appetite frequently became deranged, and left him from time to time ; then complete anorexia set in ; feeling of weight in the epigastrium, and sometimes actual pain beneath the xiphoid cartilage, and towards the left hypochondrium, after introducing food of any kind into the stomach ; frequent eructations ; vomiting from time to time ; constipation and diarrhœa alternately. The stools were sometimes serous, and occasionally bloody. The patient gradually lost flesh and strength, and, since the last few months, a short dry cough supervened. He was very much emaciated when he entered the Charité. Then the abdomen was soft and free from pain. (Rice-water with gum, starch enema, with some drops of Rousseau's laudanum, etc.) During the first fifteen days he presented nothing new ; the continuance of his cough induced us to examine his chest, but we found nothing morbid in that part. The pulse was habitually a little frequent, without the temperature of the skin being raised. The means employed to check the diarrhœa having failed, we had recourse to astringent tonics. (Decoction of simarouba, pills consisting of extract of rhatany and dragon's blood.) But, a few days after the employment of these, the abdomen, hitherto free from pain, became painful ; fever supervened ; the stools were tinged with blood. We then had recourse to gum-water, rice ptisan, Sydenham's white decoction, The stools in a little time became purely serous, the heat of skin ceased, and the abdomen was no longer painful. But, in a little time, other symptoms appeared ; after a violent attack of shivering, a pain more remarkable for its extent than acuteness was felt on the lower and right side of the chest, and at the same time a continued fever set in, with considerable exacerbation every evening. At first we thought that this pain and the accompanying fever were connected with pleuritis ; and, to combat it, twenty leeches were applied to the affected side ; afterwards a large blister was applied. This pain and fever lasted for eight days without the cough being increased, and without there being any dyspnœa, when the patient complained of the pain extending into the right hypochondrium. We examined this region, and actually found it painful to the touch, and also tense and swollen. We then asked ourselves whether the case was not one of hepatitis, and whether the thoracic pain, fever, and great anxiety of the patient, did not depend on this inflammation rather than on inflammation of the lung or pleura. Still there was not the least appearance of jaundice. On the other hand, nothing indicated that there was any exasperation of the chronic affection of the digestive passages: the tongue was remarkable only for its paleness; the stools retained the same character. Leeches were applied over the hypochondrium, which neither rendered it softer nor less painful. During the nine days following a tumour was observed in this hypochondrium to the extent of some fingers' breadth beneath the ribs. Debility increased rapidly, profuse diarrhœa set in, and he died in a little time.

Post mortem. On examining the right hypochondrium with the hand, we thought we discovered, in the situation where the tumour did exist, an obscure fluctuation; a bistoury was plunged into it before the abdominal parietes were removed, and a considerable quantity of pus gushed out. We soon felt satisfied that the tumour belonged to the enlarged liver, which descended full three fingers' breadth beneath the ribs; the bistoury penetrated into a cavity formed in its tissue large enough to contain an orange, filled with good creamy pus. This cavity was formed in the very substance of the liver, for its parietes on every side consisted of the tissue of this organ; they were lined with a whitish membraniform layer, which did not appear to be organised. Anteriorly, over the portion of the liver which formed the tumour, this viscus was connected to the abdominal parietes by soft peritoneal adhesions, not yet organised into cellular tissue, and which seemed to be of recent formation. No other trace of peritonitis was found in the rest of the abdomen. The purulent collection just described was the only one that existed in the liver; but the tissue of this organ was red every where, and remarkably soft; the least force lacerated it, and the slightest pressure reduced it to a pap. The mucous membrane of the stomach was actually liquefied, and changed into a reddish pulp over all the great cul de sac. In the pyloric portion this same mucous membrane was of a slate colour, thickened and unequal on its surface, and mammillated.

The duodenum was healthy, as also the upper portions of the small intestine. In the lower part of the ileum, and in the cæcum, numerous ulcerations were found of an irregular form, the bottom of which was formed of thickened cellular tissue, and the edges of mucous membrane; white in some; red, livid, brown, or black, in others.

In the upper lobe of each lung some crude tubercles were found, between which the pulmonary parenchyma was healthy.

Here again the existence of hepatitis coincided with that of gastro-enterite, but the latter was chronic, and it was only after it had been in existence for years that the liver appeared to begin to suffer irritation. Probably the stimulating medicines employed in order to combat the diarrhœa, had some influence on the development of the affection of the liver. It certainly was a little time after the administration of the decoction of simarouba, and the other medicines, that a pain was felt towards the region of the liver, and that the right hypochondrium became swollen. Such were the only signs which announced the hepatitis; there never was jaundice; even the urine did not become coloured, so that, before the appearance of the tumour in the hypochondrium, the pain on the right side of the chest, accompanied by a high fever, might have been referred to an intercurrent inflammation of the pleura: it must be remarked, however, that there was no dyspnœa; but dyspnœa does not always exist in pleuritis. Why was there no jaundice in this case, when it was observed in the preceding cases where the same lesions existed? This we are unable to determine.

Here, again, we find the liver red and softened, at the same time that it contained a cavity full of pus. This cavity was very superficially situated; adhesive inflammation was developed between the point of the external surface of the liver beneath which it existed and the abdominal parietes; under such circumstances the latter might also have become inflamed in their turn, and in consequence of the tendency of pus, as of every foreign body, to make its way to the exterior, it might have escaped through the abdominal parietes.

This superficial situation of the abscess gave rise, where it did exist, to an obscure fluctuation, which was recognised only on the dead body, and which, if ascertained during life, might have led us to diagnose the presence of an abscess in the liver. However, it might have still been a question whether this fluctuation was the result of an abscess formed in the hepatic parenchyma, or whether it was not owing either to a sac of hydatids developed in the liver; but then the tumour would not have been formed with so much rapidity; or to the gall-bladder filled with some liquid, but one might have detected its form, and could have circumscribed it; or to an encysted abscess of the peritoneum.

We shall again direct the reader's attention, 1st, to the lesions found in the digestive tube of an individual, who for the last three years presented the signs of a chronic gastro-enterite; 2ndly, to the healthy state of the duodenum, notwithstanding the serious disease of the liver; 3rdly, to the total absence of abdominal pains, notwithstanding the existence of numerous ulcerations in several points of the intestine (this is the most common case when these ulcerations are formed chronically, and even when they succeed to acute inflammation); 4thly, to the bad effects produced by astringent tonics, which excited fever, occasioned pains in the abdomen, and produced bloody stools; 5thly, to the well-marked difference which existed with respect to the nature of the lesions between the splenic and pyloric portions of the stomach; 6thly, to the tubercles developed in the lung, the existence of which could not have been suspected. In this respect it is a case similar to those of which we have cited several instances in this work, and in which, according to a course the reverse of that most ordinarily observed, pulmonary phthisis is developed consecutively to what might be called intestinal phthisis. It is further to be remarked that, notwithstanding the long continuance of the intestinal inflammation, there were no tubercles developed either in the coats of the intestine, or in the corresponding mesenteric glands; and still there was evidently a predisposition to the formation of these tubercles, since the lungs contained some.

CASE 17.—*Numerous abscesses in the liver, with redness and softening of the parenchyma around them—Absence of jaundice, pain, and swelling—Acute inflammation of the left lung and stomach.*

A middle-aged woman was in the enjoyment of good health, when she was attacked with a stitch in the side beneath the left mamma; all the characteristic signs of acute pleuro-pneumonia soon appeared. We saw her five days after the attack of the stitch in the side; the breathing was then very much impeded; her countenance indicated the most intense anxiety; cheeks flushed, without there being the least appearance of jaundice. The sputa were rust-coloured, viscid, uniting into a transparent mass, which adhered to the vessel, and could not be detached even by inverting it. This woman's reluctance to submit to examination prevented us from percussing or auscultating her with sufficient accuracy. There was intense fever, and also some signs of gastric complication, such as red, smooth, and dry tongue, great thirst, some vomiting from the onset of the disease, pain in the epigastrium from slight pressure. The rest of the abdomen, and particularly the right hypochondrium, was soft and free from pain. No pain had been felt in the chest.

During the six days following venesection was employed, blisters to the lower extremities, and emollient drinks. The disease became worse, dyspnœa increased, the sputa were no longer viscid, but took on the appearance of prune juice. The patient died on the thirteenth day after the commencement of the stitch in the side. Up to the last moment there was no jaundice, nor had any pain been complained of in the region of the liver.

Post mortem. Cranium. Subarachnoid cellular tissue was infiltrated with so much serum that the arachnoid was raised several lines by it; this serum was very transparent; a considerable quantity of it was also found in the ventricles.

Chest. The lower lobe of the left lung presented a mixture of red and grey hepatisation. The pleuræ pulmonalis and costalis of this side were united by soft adhesions. A little pus was found between the laminæ of the anterior mediastinum behind the sternum.

Abdomen. The liver was of the ordinary size; when viewed externally it appeared healthy. Incisions were made in several parts of it, which detected no disease at first, but on making another we detected an abscess of sufficient size to contain a kidney-bean, surrounded for some lines by a red and softened tissue. On pursuing our researches we detected nine other abscesses within the substance of the liver, one of which might contain a large nut; the others might hold a kidney-bean, a nut, or a pea. The pus which they contained was of a greenish white colour, like the pus of a phlegmon. A soft false membrane, not organised, resembling solidified pus, lined the parietes of these abscesses. Around each of them, to the extent of two or three inches, the hepatic parenchyma was softened, and of a much deeper red colour than in the other points situate at a greater distance from the abscesses.

The mucous membrane of the stomach presented some bright red dots along the small curvature and on the great cul-de-sac. In this part also it was softened; one could remove it in shreds. Nothing was found in the rest of the digestive tube but a slight vascular injection at intervals. In the place of one of the ovaries nothing was found but a serous pouch, large enough to contain an apple. A large fibrous body, the size of a nut, was found within the uterus, beneath the proper tissue of this organ and the peritoneum.

We do not here find any sign which could have induced us even to suspect the existence of any affection of the liver; there was not the least trace of jaundice; no tumour was observed in the right hypochondrium, nor pain in the hepatic region. The changes found in the liver, similar in their nature to those described in the preceding cases, differ from them in extent and arrangement. The abscesses were small, but very numerous, and it was only in the vicinity of each of them that marks of an inflammatory process (redness and softening) were found. Thus in this individual there were ten abscesses scattered through the liver, but which, taken together, would not constitute an inflammation of any considerable extent. It may, however, be reasonably admitted that the absence of jaundice depended on this circumstance, that a portion of the hepatic parenchyma had remained healthy.

There is nothing to show whether the affection of the liver in this case was acute or chronic; whether it existed long before the two-fold inflammation of the lung and stomach, or whether it supervened at the same time. On the first hypothesis it would be necessary to admit that many points of the hepatic parenchyma might be attacked with inflammation, and become the seat of abscesses, without the health being in any way affected, which, though not impossible, is scarcely probable. On the other hand the appearance of the membrane lining the parietes of each abscess did not seem to indicate that the latter were of a long standing. We would, therefore, be inclined to think that the hepatitis commenced at the same time as the gastritis and the pleuro-pneumonia; if this be correct, the case just cited would afford an instance of inflammation of the liver, terminating in suppuration, from the twelfth to the thirteenth day after its commencement; but we entertain some well-founded doubts regarding the period at which pus began to form in the liver.

Case 18.—*Abscess of the liver, with loss of colour and general softening of its tissue —Pain of long standing on the right side of the chest—Chronic nephritis—Acute entero-colitis towards the termination.*

A woman, about fifty years of age, had been voiding purulent urine for the last three years; she felt habitual pain in the region of the right kidney; besides, nearly since the same period, she felt another pain, very distinct from the preceding, under the last ribs of the right side; this pain, which was in general slight, became occasionally very acute. She wasted away gradually, and when we saw her she was in a very advanced stage of marasmus. She had never had jaundice. Her countenance was pale, jaws hollowed, the eyes sunk in their orbits, deep ulceration existed on one of the transparent corneæ. She was so weak for several months back that she was obliged to keep her bed. All the right flank was painful to the touch; it was evidently tense, more prominent than the other; no tumour could be circumscribed. From time to time the patient felt a very acute pain, which generally lasted but some minutes, and which seemed to follow the course of the ureter. The urine, which was in tolerable quantity, presented a whitish sediment, which seemed to consist of pus. In the site of the last ribs of the right side, both anteriorly and posteriorly, the patient complained of another pain, which was not accompanied either by cough or dyspnœa. The right hypochondrium was soft and free from pain, as well as the rest of the abdomen. Tongue pale, without any coating; no thirst, appetite very small; stools scanty, consistent, and generally of a brown colour. In the course of the day there was a little frequency of the pulse, without any increase in the temperature of the skin; but every evening some febrile disturbance set in; it sometimes commenced by a little shivering, and never terminated in a sweat.

This woman was considered as labouring under chronic inflammation of the right kidney. With respect to the pain which she felt about the last ribs on the right side, we were inclined to think that it depended on a chronic inflammation of a portion of serous membrane, either of the perihepatic peritoneum or of the pleura.

The long standing of the disease, the hectic fever, and the emaciated state of the individual, rendered the prognosis very unfavourable; recovery seemed impossible; a palliative treatment was all that could be adopted. (Barley ptisan, narcotic cataplasms around the right flank, sinapisms from time to time over the lower extremities, light nourishment.) The state of the patient became worse and worse; the marasmus continually increased, and the debility became extreme. Diarrhœa now set in; stools, resembling water coloured yellow, to the number of eight or ten in twenty-four hours, not accompanied with abdominal pains. Ten days after she died. Up to the last moment the tongue remained pale and moist; the intellectual faculties remained intact; no embarrassment of the respiration was observed.

Post mortem.—Extreme marasmus.

Abdomen.—The right kidney was remarkably large. It consisted merely of an immense pouch filled with pus, divided into several compartments, and communicating freely with the pelvis; the interior of the latter was also full of pus; its surface was red, as also that of the ureter. There was also found in the fundus of the bladder some redness, in the form of small spots, to the number of five or six, between which the mucous membrane was white. A sero-purulent liquid was infiltrated into the intermuscular and subcutaneous cellular tissue of the posterior paries of the right flank.

Liver not larger than usual; but its tissue was everywhere of a pale grey colour, and so softened that the finger, on pressing it, sunk into it, and reduced it to a greyish pulp; very little blood flowed from it when cut into. Towards the centre of the right lobe there was a cavity which might have contained a hen's egg, and which was filled with a whitish inodorous pus, resembling the healthy pus of phlegmons. The parietes of this cavity were lined by a false membrane, which was very dense and thick, consisting of an assemblage of fibres interlacing in different directions. Immediately around this abscess the liver was not redder than elsewhere.

The mucous membrane of the stomach was a little softened towards the great cul de sac. The mucous membrane of the ileum, to the extent of about two feet above the cæcum, and also a considerable portion of the colon, presented a bright red appearance, with softening of its tissue in some points.

The pleuræ presented no trace of inflammation except towards the summit of the left lung; there we found a sort of coif, of cartilaginous consistence, around the lung; beneath it the pulmonary parenchyma was hard and black.

In the disease whose history has been now traced it seems that the affection of the liver performed but a very secondary part. No doubt this affection contributed to the emaciation of the subject; but during life the nephritis alone gave characteric signs of its existence. The pain felt towards the hepatic region might in fact be referred to several parts, and by itself it could not indicate a disease of the liver.

The change which this organ underwent differs, in some respects, from that found in the preceding cases. Here too, no doubt, pus was formed; around the abscess, and over the remainder of the hepatic parenchyma, there was also marked softening of the tissue of the liver; but this organ, far from being redder, was, on the contrary, much paler, and contained much less blood than in its normal state.

We have already detected in other cases the existence of a similar softening of the liver, with evident loss of colour in its tissue. We then hesitated to pronounce whether it was an inflammatory lesion. Here the coexistence of an abscess with a similar state of the liver seems to prove the inflammatory nature of this state, though in our opinion it does not prove it sufficiently. May not two affections of a different nature exist simultaneously in an organ? We must not suppose that we are necessarily to find inflammation around an abscess; we have seen more than one case in which the organ in which the abscess was presented no other trace of lesion but this abscess itself.

No doubt but the disease of the liver in this individual followed a very chronic course. The long continuance of the pain might alone prove it; but we have an additional proof of the fact in the texture of the false membrane which lined the parietes of the abscess.

Here again an acute inflammation terminated the patient's life. The diarrhœa which succeeded an habitual constipation was the only sign of the acute entero-colitis, the existence of which was proved by the post-mortem examination. This serous diarrhœa, which came on without any pain, in an individual already worn out by a lingering disease, would have been classed some years ago in the number of what are called colliquative sweats, and considered as totally independent of inflammation; the latter, however, was real. No doubt the inflammations which come on under such circumstances are not connected with a plethoric state; but it must be admitted as a fact, that however small the quantity of blood is which remains in the system, and however exhausted the strength of the patient may seem to be, there is nevertheless a very ready and very frequent afflux of this residue of blood and strength towards different irritated points, and particularly towards the gastro-intestinal mucous membrane. It would seem that, from the mere circumstance of the primary chronic affection having destroyed the equilibrium of the healthy state, there is a constant tendency to an unequal distribution of life and blood in the different organs.

Case 19.—*Abscess of the liver opening into the stomach—Symptoms of chronic gastritis—Jaundice at the onset.*

We possess but little information with respect to the case of the individual here referred to ; we know, however, that when he entered the Charité he had been for a long time complaining of anorexia, pain in the epigastrium, never of vomiting, frequent accessions of fever, and that he was very much emaciated. The skin was merely pale : but two years before, towards the commencement of his illness, the patient had had jaundice, which lasted four months.

The post-mortem examination presented the following lesions :

1st. In the cranium, ossification of a considerable portion of the falx of the dura mater. (The patient was scarcely forty years of age.)

2nd. In the chest, some tubercles scattered through the pulmonary parenchyma, which in other respects was healthy.

3rd. In the abdomen, close adhesions between the liver and stomach. On the interior the latter viscus presented, towards its posterior surface, a solution of continuity which involved all its tunics, about the breadth of a two-franc piece, through which a probe being introduced penetrated into a cavity in the liver large enough to contain an orange, and which was filled with genuine pus. The parietes of this cavity were lined with a thick membrane, which seemed to be of a fibro-mucous texture.

The perforation of the stomach seemed to be from without inwards ; the inflammation extended at first from the liver towards the peritoneum situate between it and the stomach, and occasioned the formation of adhesions between these two organs ; at a later period the coats of the stomach became in their turn inflamed in a circumscribed portion of their extent ; and the peritoneal, cellular, muscular, and mucous membranes became successively and simultaneously destroyed. So that this differs from other more common cases, in which an ulceration forming in the stomach from within outwards, ultimately destroys all the tunics of the stomach at the point where it first commenced ; and then the parietes of the stomach, completely destroyed at this point, are supplied either by the liver, or by the pancreas, &c.

Be this as it may, the purulent cavity formed in the liver must naturally empty itself in part into the stomach. Would pus have been found in the alvine evacuations ? It should be observed that the opening which communicated between the interior of the stomach and the hepatic abscess was still inconsiderable, and had probably existed but for a short time. The nature of the stools alone might have thrown some light on this latter point. Under such circumstances could the parietes of the abscess have approximated gradually, according as it emptied itself into the stomach ? If that had occurred, we may easily conceive that the cure of the liver disease would not have been impossible.

We should not forget to remark that, in the case now detailed, no appreciable alteration of the liver existed except where the abscess was ; we have, however, no hesitation in considering this as having been produced by an inflammatory process. But, suppose a hard substance, encephaloid tissue, for instance, existing in this way in the midst of the liver without any alteration in the texture of the organ around it, this latter circumstance cannot serve as a reason for denying the existence of a previous inflammation where the accidental production was originally formed. Besides it is probable that at a certain period the liver would have been found more or less changed around the abscess ; but it had returned to its normal state, according as a membrane, becoming organised around the pus, had gone on to separate it more completely from the hepatic parenchyma, in which it remained as a foreign body. In this state of things the existence of an abscess in the liver may be easily conceived without any disturbance occurring either with respect to the texture or the functions of this organ : this is what unquestionably happens with respect to the encephalon : observation has proved the existence of encysted abscesses in the brain of individuals who, for a longer or shorter time before, had had all the signs of an acute encephalitis. The symptoms of the latter had disappeared, and the disease might have been considered as completely cured ; this cure, however, was only provisional in some degree, until a new process of inflammation was set up around the abscess. Thus also we may readily conceive how a foreign body might remain for a long time in the brain, without manifesting irs presence by any symptom, and then all at once indicate its existence by different signs of encephalitis or cerebral hemorrhage.

In the individual whose case gave rise to these reflections there was no characteristic sign of any chronic affection of the liver. But, if we go back to examine the other periods of his disease, we shall find that, when he commenced no longer to enjoy his habitual health, he had jaundice of considerable duration. At no period, moreover, were the inflammation of the liver, and the suppuration in which it terminated, indicated by any pain. This is again less surprising in this case, where the disease followed an essentially chronic course, than in other well-attested cases wherein the course of the disease was acute.

If it be true that pain occurs in the majority of acute inflammations, it must also be acknowledged that in none is it a necessary condition of their existence. Are there not cases of pleuritis and peritonitis unaccompanied with pain ?

CASE 20. *Abscess of the liver opening into the peritoneum—Increased size of the liver—Jaundice—Pain in the right shoulder—Chronic gastritis at the onset.*

A tailor, fifty years of age, who had had repeated attacks of syphilis, which were treated with mercury given internally, and in the form of friction, since his forty-ninth year, after a syphilitic affection, for which he had taken sarsaparilla and Van Swieten's liquor, began to complain of occasional pains in the epigastrium. In their abrupt appearance as well as in their sudden cessation, in their nature and intensity also, they bore considerable resemblance to what is commonly called *cramp of the stomach.* During the intermission the appetite was preserved, and the health seemed to be very good. By degrees, however, he lost flesh and strength ; these gastric pains, which were temporary, but very acute, were succeeded by a dull pain, or rather by an habitual sensation of weight ; the appetite became irregular, and was then lost altogether. Such were the symptoms which existed for eighteen months ; the patient still attended to his usual business. At the end of this time the conjunctivæ and skin began to present a yellow tint, which became more and more marked, without any pain being felt in the region of the liver. But some time after the appearance of the jaundice a troublesome and continual pain was felt towards the right shoulder ; it continued to be felt more or less from that time.

When we saw the patient all the cutaneous surface was of a well-marked yellow tint. The pain in the right shoulder was still felt. In the right hypochondrium the liver was felt, which descended three fingers' breadth below the edge of the ribs : it was pressed without seeming to be painful. The affection of the stomach was characterised by a total distaste for every kind of food, by an habitual sensation of weight in the epigastrium, vomiting at intervals, a sensation of burning heat occasionally felt along the œsophagus, which seemed to commence at the cardiac orifice. The tongue was habitually covered with a whitish coat, without any redness of its edges ; the stools were scanty. There was some fever every night.

One day very acute pains were felt in the right hypochondrium, and the day all over the entire abdomen. At the same time there was vomiting, tension of the abdomen, which could not be pressed in any part without exasperating the pain ; he could lie only on his back. The pulse was weak and irregular ; the skin became cold; and death supervened three days after the commencement of these pains.

Post mortem.—Sero-purulent effusion into the peritoneum; liver hypertrophied. On raising it we observed a little to the right of the gall-bladder, on the lower surface of its right lobe, an opening in its substance, through which the index finger might be readily introduced: this opening led into a cavity full of pus, the parietes of which were formed of the parenchyma of the liver; inferiorly this parenchyma formed but a very thin floor, which separated the cavity full of pus in the liver from the peritoneal cavity. It was this thin lamina of the hepatic tissue which gave way, and allowed the pus formed in the liver to escape into the peritoneum, whence arose acute inflammation of this membrane.

There were two or three red spots on the gastric mucous membrane, over the great cul-de-sac, each being about the size of a two-franc piece. In some parts it was so soft as to resemble liquid mucus deposited on the subjacent cellular tissue. In the pyloric portion, on the contrary, the mucous membrane of the stomach was thickened, hypertrophied, and of a brownish colour: this same colour was found in the two first portions of the duodenum.

The stomach was the first organ which appeared to be affected in this individual. It is impossible to say at what period the affection of the liver commenced; it is probable that the inflammation of the stomach extended gradually to the biliary apparatus; we were not apprised of the existence of any affection of the latter till the jaundice appeared, which, instead of being merely of a temporary duration, as in the subject of the preceding case, continued, on the contrary, till the death of the patient, Except, however, a slight increase in the size of the liver, which was observed here, and not in the preceding case, the state of this organ was the same in both. In both the abscess was situate much nearer the concave than the convex surface of the organ; only in the preceding case it occupied the left lobe, and in this case the right lobe.

This is the first case in which we find, among the morbid phenomena which manifest themselves during the progress of a disease of the liver, the pain in the right shoulder. Neither has M. Louis met it in any of the five cases of abscess detailed by him. From this it must certainly be inferred that this pain is much less frequently met in the different affections of the liver than it has been stated.

The different cases of abscess of the liver which have been now cited have pointed out to us the principal varieties which these abscesses may present; 1st, in the pathological anatomy; 2ndly, in their causes; 3rdly, in their complications; 4thly, in their progress; 5thly, in their symptoms; 6thly, in their modes of termination. We have spoken elsewhere of those purulent collections sometimes found in the hepatic parenchyma, and which seem to have been deposited rather than formed therein. These purulent collections usually coincide with other collections found in different organs, and in the great majority of cases they appear to be connected with phlebitis.

We shall now cite some cases wherein, instead of pus, another species of accidental production was formed in the hepatic parenchyma, the two principal varieties of which have been designated scirrhous and encephaloid tissue. Having already expressed our opinion on the origin and nature of these productions, and as we propose to recur to them more in detail in another work (*Pathological Anatomy*), we shall not here deviate from the language generally received; we shall retain provisionally terms which seem to us neither correct nor sufficient, the use of which, however, custom has consecrated; and, supposing the anatomical nature of cancer of the liver already known, we shall in the following cases endeavour to point out its symptoms and progress. These cases will show how variable are the signs which indicate cancerous affections of the liver. Thus, with respect to the symptoms, there are many shades between such of those affections wherein there is at one and the same time a tumour in the right hypochondrium, pain in this same part, jaundice, ascites, anasarca, and those where none of these morbid phenomena are observed, and where the post-mortem examination alone discovers the disease of the liver. With respect to their course, there are some of these affections which really resemble acute diseases, which are developed, and terminate fatally in a very short space of time: there are others, which continue for a great number of years, without producing any very serious symptoms for a considerable time. We shall also see that, as well as the other diseases of the liver already mentioned, cancer of this organ is most frequently accompanied during life by gastro-intestinal symptoms; and that frequently, though not always, traces of chronic inflammation are found in the digestive tube, and particularly in the stomach. We shall now cite a case of cancer of the liver remarkable for its rapid course.

SECTION II.

CASES OF CANCER OF THE LIVER.

CASE 21.—*Cancerous tumour of the liver and gastro-hepatic epiploon, which terminated in death three weeks after the first appearance of the symptoms—Jaundice—Healthy state of the digestive tube.*

A foreign merchant, about forty-five years of age, had been several times attacked with intermittent fevers; however, he enjoyed good health since the fortieth year of his age. During the month of April he felt some slight pains immediately beneath the cartilaginous edge of the false ribs of the right side; towards the end of the month jaundice appeared; he then entered the Charité. When we saw him he had no fever; his appetite was very good; the digestive functions seemed to be intact, only the stools were devoid of the natural colour; the urine was of an orange-red tint; the right hypochondrium was soft and free from pain. (Whey, with acetate of potash; pills of calomel and soap.)

May 2nd.—The pains in the right hypochondrium reappeared; on the following days they continued, fever set in, the hypochondrium became tense, as if it were occupied by the tumefied liver. (Leeches over the hypochondrium.)

May 9th.—We began to feel, immediately beneath the edge of the ribs, to the right of the epigastrium, a round immoveable tumour, which was very painful on pressure. (Narcotic cataplasms.)

From the 9th to the 15th the tumour became very large; it was now visible, and beside it several other knobby, uneven, and painful tumours soon appeared.

From the 15th to the 20th these tumours extended behind the cartilages of the ribs, and raised them considerably; at the same time the patient began to vomit his drinks, three or four hours after taking them; the fever was continued with a violent exacerbation every evening, during which the pains of the hypochondrium became very acute; the patient wasted away with frightful rapidity. He died on the 21st.

The liver was large, and passed the breadth of four fingers beyond the edge of the ribs. From its convex surface several tumours projected, formed of a mixture of accidental productions, usually designated by the name of scirrhous, encephaloid, and tuberculous tissues. These tumours extended a considerable way into the substance of the viscus. Between them the tissue of the liver did not appear changed. Similar tumours surrounded and compressed the ductus hepaticus and choledochus, as well as the pyloric extremity of the stomach.

It is possible that the tumours of the liver and gastro-hepatic epiploon now described had existed for several years in this individual, and that their first origin was connected with the repeated intermittent fevers to which he had been subject. The existence of such tumours, still small, few in number, and in a state of crudity, is not incompatible with a tolerably good state of health. But what we wish principally to point out here is, the extreme rapidity of their increase, and the rapidly fatal symptoms to which this rapid increase gave rise. The febrile disturbance was here similar to that which accompanies acute inflammation of the digestive tube; the severity of the pain was directly proportioned to the acute development of the cancer. It was also remarkable how rapidly the patient wasted away. In this rapid and very great alteration of nutrition, how very much must not the blood and nervous system also have been modified! Thence probably the extinction of life.

This case may be compared to those cited in a preceding part of this work, which refer to the acute development of tubercles within the pulmonary parenchyma.

We shall not omit to notice here the very healthy state of the tissue of the liver around the cancerous masses. Is it not, however, under such circumstances that we should have found traces of inflammation?

We submit this fact to the consideration of those who refer the cause of every accidental production to this latter circumstance.

The jaundice, which existed during the entire time the patient stayed in the hospital, might be connected with the alteration of the hepatic parenchyma; but, independently of that, we here find another circumstance to account for it, a cause of obstruction altogether mechanical in the tumours, the existence of which was proved by the post-mortem examination, around the ductus hepaticus, and choledochus; in this case, also, the nature of the stools announced before the patient's death that the bile no longer entered the duodenum.

The vomiting, which came on towards the close, was not accounted for by a morbid state of the digestive passages; the stomach, duodenum, and the remainder of the digestive tube, were all found exempt from every species of lesion. Might not this vomiting be referred to the compression on the pylorus by the tumours which surrounded it? This fact further proves that there may be fever, and the patient may die, without there being any gastro-intestinal inflammation.

CASE 22.—*Cancerous tumours in the liver, and also in the stomach, in the lymphatic glands in front of the spine, and around the uterus—Tumour and pain in the right hypochondrium—Jaundice—Ascites.*

A washerwoman, fifty-three years of age, had been ill for about seven months, when she entered the Charité. She had at first all the symptoms of acute rheumatism; pain in the lumbar region; painful swelling of several joints; fever. She then entered the Hotel Dieu, where she was bled several times. When she left it (about three weeks after her admission) she was free from the pains of the joints and those of the lumbar region. But presently new symptoms supervened; she began to feel a dull pain on the level of the last ribs of the right side; at the same time the digestive functions, which till then were good, became deranged; the mouth was constantly dry, and often bitter; immediately after taking food she was troubled with acid eructations; her food was from time to time vomited. No pain was felt in the epigastrium. These different symptoms appeared and continued during the six months preceding her admission into the Charité. When we saw her, her state was as follows:—

Emaciation was considerable; the conjunctivæ were yellow, as well as the entire skin. This jaundice had been in existence only for the last six weeks. Evident fluctuation in the abdomen; she stated that her abdomen began to swell nearly at the same time that she became yellow; the extremities had never been infiltrated. The right hypochondrium and right part of the epigastrium were occupied by a tumour, the form of which we could not ascertain satisfactorily, nor could we circumscribe its limits in consequence of the fluid effused into the peritoneum, some of which was interposed between the tumour and the abdominal parietes. This tumour was in other respects very distinct; the patient felt rather acute pains in it, but only at intervals; these pains, however, did not come on in a lancinating form. Pressure was painful over all the right hypochondrium; everywhere else the abdomen was free from pain. The tongue was covered with a thick yellowish coat. There was complete loss of appetite for the last five months. The mouth was usually dry, without there being much thirst; the introduction of food, and even of drink, into the stomach, was followed by a sensation of weight in the epigastrium. This sensation was changed into that of a burning heat when the patient drank merely a single spoonful of wine. Vomiting had not now occurred for a considerable time; but she often voided, as if by regurgitation, a certain quantity of what she called glairy mucus. There was usually obstinate constipation. The urine was a mahogany-red colour, small in quantity, and was scalding hot when being passed. Pulse not frequent, remarkably small; skin dry, and not hot; but every evening, for the last two or three months, the patient felt herself burning hot.

She died six days after her admission. During this short space of time all the drinks which she took were rejected by vomiting; she had frequent fainting fits; the two thighs were infiltrated a little; the urine presented a very copious rose-coloured deposit; the pulse gradually ceased to be felt; after her last effort to vomit she fainted, and expired.

Post mortem. The liver passed several fingers' breadth beyond the edge of the ribs. It was knobby, marked with white irregular spots, in the centre of several of which there was a depression. These spots corresponded to so many cancerous masses which existed in a great number within the liver. Three substances, of different appearances, formed them: one of a yellowish-white colour, and friable; the other greyish; the third of a dull white, traversed by several reddish lines. Around these morbid products, to the extent of some lines, the tissue of the liver was softer, more friable, and redder than elsewhere.

The bile ducts, at their exit from the liver, were surrounded by large cancerous masses, which might contribute to obliterate their cavity.

Stomach. Not far from the pylorus, which was free, the mucous membrane was raised by an irregularly rounded tumour, the size of a large chestnut, formed of a tissue of a dull white colour; beneath it the muscular membrane was healthy. The portion of mucous membrane covering it closely adhered to it; it was manifestly thickened, and of a slate colour. The stomach was filled with a matter resembling soot.

In front of the vertebral column other cancerous masses were observed, by several of which the aorta was raised.

Five or six small tumours, each the size of a nut, consisting of a dull white tissue, and without any appearance of fibres, were found between the proper tissue of the body of the uterus and the peritoneum covering it.

The progress of this cancer of the liver was also rather rapid; the patient died six months after the appearance of the first symptoms which indicated the existence of any affection of the liver and stomach. It would be difficult to say which of the two affections preceded the other; it would appear that they commenced nearly at the same time. The disease of the liver here is extremely well marked; there was pain and swelling of the right hypochondrium, jaundice, and ascites;

pain was one of the first symptoms which appeared. It was never as acute as in the subject of the preceding case; nor was it lancinating, as all the pains of cancerous affections are stated to be. With respect to the jaundice we here again find it to coincide with the existence of tumours which, developed around the bile ducts, might compress or irritate them.

We should not forget to remark that in this individual, wherever the function of nutrition deviated from its normal type, accidental products of the same nature were developed. Thus nothing could be more like the matter found in the liver, than that which was deposited in the substance of the parietes of the stomach, around the body of the uterus, and before the vertebral column; this was principally remarked around the uterus, where fibrous tumours are generally found.

CASE 23.—*Cancer of the liver—Chronic gastro-duodenitis—Tumour in the right hypochondrium—Jaundice.*

A public writer, thirty-seven years of age, enjoyed a good state of health, when one day, after having been exposed to a current of cold air, whilst he was in a state of perspiration, he was seized with the different symptoms of cholera morbus; profuse evacuations, upwards and downwards, sudden prostration, etc. These symptoms disappeared after a few days; but from this moment he felt a difficulty in digesting his food hitherto unknown to him; the presence of food excited in him a feeling of fulness and abdominal tension; he had sometimes also some diarrhœa. Three years passed on in this way, after which he became yellow. He then entered the Charité.

His emaciation was now considerable: all his skin was of a jaundiced colour, and was so for the last seven or eight months. We felt very distinctly in the right hypochondrium a body with an uneven surface, which terminated in a thin edge a little above the level of the umbilicus, and which, on the left, extended into the epigastrium a little beyond the xiphoid cartilage. The patient did not perceive the presence of this tumour; he had never felt the least pain in it, nor did pressure produce any in it. One could hardly hesitate ~~to~~ admit that this tumour was the liver increased in size; but what was the nature of the affection? was it merely hypertrophied, indurated, or softened? were accidental productions developed in it? This it was impossible to determine. There neither was at present, nor had there been, any dropsy. For a long time back the patient had lost all appetite; when he took the least aliment, solid, or liquid into his stomach, he experienced a general indisposition, and at the same time a feeling of swelling at the epigastrium, but never any real pain. A great quantity of gas was voided by the mouth; he had scarcely vomited two or three times when his digestion began to be deranged. He complained of often feeling pulsations of the heart, sometimes preceded by rather an acute pain in the præcordial region. He also experienced from time to time very distressing headachs, disturbances of vision, formications in the hands and feet, temporary chronic contractions of the different muscles. He said he had no longer any physical or moral strength, and that he was continually exhausted, as a person who had exercised himself beyond his strength. For several months back the frequent diarrhœas to which he was subject were succeeded by an obstinate constipation; the latter set in nearly at the same time that the jaundice appeared. The colour of the stools was not ascertained, nor that of the urine. The pulse was uniformly frequent; the palm of the hands burning hot; skin always dry; and the patient complained of a very troublesome itching.

Vichy water was given him, which had no other effect than that of lighting up fever, and of exciting pains in the epigastrium, which the patient had not previously felt. But this ceased as soon as the use of the mineral water was given up. This patient remained for about two months in the hospital, gradually becoming weaker. On a sudden, symptoms of pleuro-pneumonia of the right side set in, which were treated by revulsives applied to the chest and lower extremities; this proved unavailing, and he died.

Post mortem.—Greenish yellow tint of the entire skin; some red spots resembling ecchymosis on the legs. Extreme marasmus.

The liver formed in the abdomen a large tumour, which occupied the right hypochondrium, the epigastrium, left hypochondrium, and descended on a line with the umbilicus. It presented a smooth and even surface. Externally it was remarkable for its brownish-green colour, and presented no other alteration. But we had scarcely made an incision into it when we found in it a number of whitish masses, hard or soft, reduced to a pap; several streaked with reddish lines, which left between them certain areolæ varying in form and size, others having blood effused into the midst of them. There was bile in the gall-bladder.

The internal surface of the stomach presented through its entire extent a slate colour, the seat of which was in the mucous membrane; this membrane was thickened, indurated, uneven at its surface. The same colour was continued into the duodenum, the follicles of which were moreover observed to be very much enlarged. Over the rest of the digestive tube nothing was observed but large oval patches, with black points, towards the termination of the ileum (Peyer's glands), and a brownish colour of the cæcum.

The mesenteric glands, principally those corresponding to the cæcum, were large, and of a pale red colour internally.

False membranes of recent formation connected a considerable portion of the pleuræ costalis and pulmonalis of the right side. The lower lobe of the lung of this side was in a state of red hepatisation. No lesion of the heart or of its appendages. In the encephalon considerable serous infiltration of the subarachnoid cellular tissue of the convexity of the hemispheres.

We here find one symptom less than in the preceding cases, namely, the pain. This is a well-marked case, which proves that cancerous masses may be developed in great numbers in the liver, may exist there, both in their crude and softened state, without this organ becoming the seat of any pain. If we inquire why in this case the affection of the liver was completely free from pain, whilst in those already cited it was accompanied with pains more or less acute, of a lancinating character or otherwise, we shall not find any reason for this difference either in the number or texture of the accidental productions, or in the state of the tissue of the liver around them. We may remark here, however, that none of these productions was visible externally; that they were all deep seated in the organ, and remote from the peritoneum.

The onset of the disease is another remarkable circumstance in this case. It was after cholera morbus that different disturbances of digestion appeared, which were proved by the post-mortem to be the result of a chronic gastro-enterite. At the time of the patient's death there had been no diarrhœa for a long time, and the symptoms indicated that intestinal inflammation, properly so called, no longer existed. We should consider also the species of lesion found in the intestine: mere enlargement of Peyer's glands, and brown colouring of the cæcum. These two lesions remained as traces of an inflammation which no longer existed; there was besides a state of hypertrophy of the glands of the mesentery, which probably was also the result of the previous enterite.

With respect to the stomach, the chronic inflammation having extended to the duodenum, of which it was the seat, indicated its existence by two orders of symptoms: the one, local, were those to which we have already several times called attention; the epigastric pain existed but temporarily, and in a form in some measure accidental under the influence of a stimulating treatment. Other symptoms were general, and the result of irritations sympathetic of the affection of the stomach: we may remark principally that general indisposition, that marked sinking (brisement) of which the patient complained, the formication, head-ache, muscular contractions, the beating of the heart which he experienced, and the momentary pains which he felt in different parts of the body. How many times have such symptoms been called nervous, because the local lesion of which they were the sympathetic effect was indicated by symptoms so little marked that it easily escaped investigation?

In this patient also the disease of the liver appears to have been consecutive on the gastro-intestinal affection; the jaundice came on a considerable time after the digestive functions began to be deranged. There was not here, any more than in the preceding cases, any obstacle to the course of the bile. It may further be remarked that in this case the disease of the liver was found to be connected with a chronic duodenitis; at least we are disposed to consider as such, or at least as vestiges of it, the slate colour of the mucous membrane of this intestine, and the hypertrophy of its follicles.

Case 24.—*Cancerous masses developed in the liver—Diminution of its size—Chronic gastritis (Ulceration, with scirrhous induration of the submucous tissues)—Jaundice—Ascites—Absence of pain.*

A man, sixty-six years of age, who had been a soldier for 18 years, had had an intermittent fever of a quartan type, which lasted for nine months. However, after recovering from this fever, he continued to enjoy very good health. About a year before his entering the Charité he got a fall, in which the epigastrium was very much contused by a hard body. A little time after this fall he had profuse hematemesis, and since then, without ever experiencing any epigastric pain, he lost appetite, had frequent purging, and became yellow. About two months before entering the hospital the abdomen began to swell, without pain having ever been felt in any part of that cavity.

State of the patient at the time of his admission:—Jaundice over the entire body well marked; emaciation; evident fluctuation in the abdomen, which was very much enlarged, free from pain in every part, nor could any tumour be detected in it. Tongue white, without any redness at apex or edges; no thirst; loss of appetite; no vomiting at any period; three or four liquid stools in the twenty-four hours, for several months back. Fæces were yellow. Pulse a little frequent, without any heat of skin. Urine reddish, depositing a sediment. (Fumigation with juniper baths; frictions on the extremities with camphorated alcohol and tincture of cantharides; diuretic drinks.) The patient gradually became weaker, and died. Towards the termination the diarrhœa increased very much, and fever set in. No pain had been felt in any part of the abdomen. The ascites went on increasing. The lower extremities became a little infiltrated. A little before death the patient, who previously had no cough, expectorated a considerable quantity of greenish puriform sputa.

Post mortem. Skin yellow: effusion of a great quantity of fluid into the peritoneum, which, however, presented no trace of inflammation, either recent or of long standing.

The liver occupied but a small space behind the last ribs of the right side: its ize was evidently less than natural; its tissue was of a greenish-brown colour. In ..s interior we found five or six whitish masses, each nearly the size of a large nut; four of them were hard and streaked with some reddish lines, or dotted with points of the same colour; two others of them were softened, and in one of the latter there was a little blood mixed with the detritus of the mass. None of them projected, nor were they visible on the exterior of the liver.

There was a large ulcer on the inner surface of the stomach, towards the great cul de sac, as large as a five-franc piece. Its edges were formed of tumefied mucous membrane. At the bottom of it the submucous cellular tissue was at first found changed into a substance of a dull white colour, several lines in thickness

Beneath it was the muscular membrane, which everywhere presented the same appearance. In several points, and principally towards the circumference of the ulcer, this membrane was thicker than outside the ulcer. There it was divided into fasciculi, or lobules, by white fibro-cellular intersections, which on the one hand were connected with the submucous cellular tissue, and on the other hand with the subperitoneal cellular tissue. Near the centre of the ulceration the muscular membrane was not so perceptible ; it presented itself merely in the form of thinly-scattered fasciculi, separated by considerable intervals occupied solely by masses of white cellular tissue. These masses seemed to be merely an enlargement of the white striæ of the circumference. As we have explained it elsewhere, according as the cellular tissue forming these lines and these masses became developed, the muscular tunic, being compressed, partly disappeared. In other parts, where the homogeneous white tissue became more predominant, the muscular tunic actually existed merely in shreds, in isolated points ; everywhere else no trace of them was perceived. Some lymphatic glands enlarged, and, after undergoing the white (scirrhous) induration, were found beneath the ulceration just described, between the stomach and spleen, and closely united these two organs together. The mucous membrane of the termination of the ileum presented a bright red injection ; that of the large intestine was thickened, and of a brownish-grey colour. The inner surface of the aorta, of the costal cartilages and dura mater, presented a well-marked yellow colour.

It was after external violence that the affection of the stomach appeared to have come on in this individual ; and, consecutively to this, the disease of the liver. The disease commenced by a most alarming symptom, hematemesis ; and whether this was the result of a rupture of a large vessel, occasioned by the fall on the epigastrium, or whether it depended on mere exhalation of the congested capillaries, this vomiting was followed by disorganisation of both the stomach and liver, which was not indicated by any pain. It was only towards the termination of the disease, when the power of nutrition had been a considerable time modified, that jaundice and ascites came on, the only symptoms of liver disease. Besides the cancerous masses, we find, in order to account for the ascites, that diminution in the size of the liver, which in some of the preceding cases we have frequently seen, coincide with collections of serum in the peritoneum. With respect to the jaundice, it was not accounted for in this case by the existence of any obstacle in the bile ducts ; and further, we are certain from the nature of the stools that the bile entered the duodenum during life.

Nor should we forget to remark how severe the alteration of the stomach was, and how little marked were the symptoms which announced it. Distaste for food, and nothing more !

Some lymphatic glands were enlarged here in the vicinity of the ulceration of the stomach, as they are seen frequently enlarged in the vicinity of acute or chronic inflammations of the intestine.

The increase of the diarrhœa and the fever during the last few days seem to us to be owing to the red injection of the termination of the ileum ; whilst the state of the large intestine accounts for the old purging. Thus, worn out by a chronic disease, this individual, like so many others, died of acute inflammation.

Case 25.—*Cancer of the liver ; similar degeneration of the stomach, pancreas, and epiploon—Indolent tumour in the right hypochondrium—Derangement of the digestive functions—Absence of jaundice and dropsy.*

A woman, forty-three years of age, enjoyed good health up to the age of forty. She then ceased to menstruate, and nearly at the same time her digestion became deranged, without her experiencing any real pain in the epigastrium. She had no appetite ; the introduction into the stomach of the little food which she took was followed by general indisposition, and a feeling of fulness in the abdomen. She had frequent acid eructations. In this first period of her disease she took some rhubarb, then some quinquina; no improvement followed this: she then took some quinquina in decoction, without any benefit. She was then attacked with vomiting, which afterwards came on at intervals more or less remote. The matters vomited were of three kinds: sometimes it was merely the food which she had taken; sometimes a great quantity of mucus; sometimes again a brownish liquid, like coffee-grounds.

This gastric affection was of three years' standing when we first saw her; her emaciation and debility were extreme; the face had a marked straw-coloured tint; there was no trace of jaundice in any other part. The liver evidently extended two or three fingers' breadth below the ribs in the two hypochondria and epigastrium; the sharp edge of it was readily traced. The patient felt no pain in any point of the chest or abdomen, nor did pressure occasion any. The tongue was merely pale; frequent acid eructations took place, and almost every day for some time she vomited the matters mentioned above; the stools were scanty, brownish, and hard; pulse small and frequent; skin hot and dry. (Demulcent drinks; milk and water.)

A few days after the patient's admission *two blisters were applied to the legs;* they occasioned great irritation of the nervous system. On the day after she was in a state of great agitation; the pain she felt in the parts to which the blisters had been applied forced the most piercing cries from her; the pulse, which was small and contracted, had become very frequent; the blisters were covered with an emollient cataplasm. In the course of the day this nervous exaltation, so very remarkable in the exhausted state of the patient, was succeeded by extreme sinking, both physical and moral. In the evening the blistered surface was covered with a black crust; death took place the next morning.

Post mortem. Great emaciation. No trace of jaundice, nor of dropsy.

Nothing remarkable in the brain and its membranes. Ventricles empty.

The liver, as we had ascertained during life, extended as far as the left hypochondrium, and went three fingers' breadth beyond the edge of the ribs. In the right flank it touched the crest of the ileum. The stomach was completely covered by it. Externally it was of a reddish colour, streaked in several places by a dirty white tint. Where this latter tint existed the finger felt a manifest fluctuation. It corresponded accordingly with large cavities filled with a sort of pap, the colour of which varied from a dirty grey to a red. In whatever part an incision was made into the liver, similar cavities were entered. Several contained a more solid matter, which again might be readily crumbled by slight pressure, and which was then changed into a pap similar to that contained in the other cavities. Again in some few places we found tumours in the tissue of the liver, the size of a large nut, formed of a dull white substance, streaked with reddish lines, some points of which were changed into a pulpy liquid of a dirty reddish-grey colour. The gall-bladder was distended with a very black and very thick bile.

The liver having been removed, another large tumour was discovered, limited above by the stomach inferiorly, and on both sides by the three portions of the duodenum. It consisted of apparently inorganic matter, of a dull white colour, hard, and creaking under the knife. On its left side nothing was found but a very small vestige of the pancreas. On including this gland and the tumour in one and the same cut, the healthy tissue of the pancreas was observed to disappear all at once, and to be succeeded by the tissue of the tumour. On the inner surface of the latter, however, some scattered granulations of the gland were observed.

The tumour just described was continued with several others of the same nature, which surrounded the pyloric extremity of the stomach and the commencement of the duodenum.

To the extent of five or six fingers' breadth on this side of the pylorus there was nothing found in the place of the different coats which constitute the parietes of the stomach but a homogeneous white and hard tissue. Over this extent the mucous membrane was destroyed; at the bottom of the ulcer arising from its destruction there was a whitish pulpy matter, one or two lines thick. Lastly, in the substance of the great epiploon, immediately below the transverse colon, a tumour was developed, as large as an ostrich's egg, formed, as that circumscribed by the duodenum, of a homogeneous, hard, and dull white substance.

Is it not a very remarkable circumstance in this case that, notwithstanding the great number of accidental productions called cancerous, developed in different parts of the abdomen, no pain was ever felt? The enormons tumour formed by the liver was uniformly free from pain, and yet the cancerous masses which had in a great measure taken the place of its tissue were completely softened; blood was mixed with them, and, what is more, they were in almost immediate contact with the peritoneum investing the circumference of the liver.

Neither do we find in this case any trace of jaundice, but only that straw-colour tint of the face which accompanies some cancerous affections, and which has more than once served to distinguish, during life, simple chronic inflammation of a tissue from its organic degeneration.

The degeneration of the pancreas, of which we had here an instance, is a rare fact in pathological anatomy. Most frequently it is found intact amidst the most serious disorganisations of the stomach and the other surrounding tissues. Would it not seem that in this case it was principally the cellular tissue, interposed between the granulations of the pancreas, which was altered and indurated; and that, according as this cellular tissue was developed, the granulations were atrophied, and ultimately disappeared? Several times in the salivary glands, and once in the lachrymal gland, have we been able to trace the process of disorganisation now alluded to. The granulations of those glands were still distinct, but merely scattered, and separated from each other by thickened and indurated cellular tissue. We should not forget to remark the mischievous effects produced in this individual by the application of blisters to the legs. What more striking instance could be given of individual predisposition! Thus, in certain patients, the slightest irritant introduced into the digestive passages will occasion the most alarming symptoms; whilst in others the most violent drastics will be entirely ineffectual.

CASE 26.—*Cancer of the liver and stomach—Ascites, without any other symptom of liver disease.*

A man, sixty-five years of age, who had habitual purging for the last year (three or four liquid stools in twenty-four hours, preceded by colicky pains), felt some pains in the epigastrium. During the last two months he had sour eructations after eating, and sometimes had a disposition to vomit. Since the last month, ascites, and some œdema of the lower extremities: no pain felt in any other part of the abdomen; the right hypochondrium was never painful. This person became more and more exhausted, and died.

Post mortem. Considerable effusion of limpid serum into the peritoneum; liver of the ordinary size, concealed behind the ribs, seemingly healthy on the outside, but presenting internally a great number of cancerous masses, several of which were softened. These masses occupied nearly three fourths of the organ, the healthy tissue of which was nearly reduced to a very small size. The internal surface of the stomach presented, towards the middle of the small curvature, an ulcer broader than a five-franc piece, in the bottom of and around which the submucous cellular tissue was found considerably thickened, scirrhous, and the fleshy tunic hypertrophied. In the large intestine the mucous membrane was found to be pale, but very much softened. There was a little redness at the termination of the small intestine. The apex of both lungs was hard and black; in the midst of this indurated portion small grains of a stony consistence were found.

In this case there was neither tumour nor pain present or past, nor jaundice either at the time, or previously, to characterise the disease of the liver. The ascites, which one might readily see did not depend on an affection of the heart, and which did not appear to be attributable to an inflammation of the peritoneum, might incline one to think that there was disease of the liver; but, if from this ascites one would have wished to announce the nature of the disease with which the liver was affected, he would rather have diagnosed the existence of one of those hard, small, shrivelled livers, already spoken of, than that of a cancerous liver; for the latter produces ascites, without any other symptom, much more rarely than the other lesion. Here again, as in most of our other cases, we remark the simultaneous existence of the affection of the liver and of the digestive tube; here also it is not the duodenum which we see to be specially affected.

SECTION III.

OBSERVATIONS ON HYDATIDS OF THE LIVER.

Case 27.—A chanter in a church, thirty-one years of age, had for several years indulged in alcoholic liquors to excess. Three years before his admission into the hospital he had small-pox; before this he had enjoyed uniform good health. For five months after convalescence from this he had purging, accompanied with slight abdominal pains. This, however, was soon removed by proper treatment. Some time after, he began to feel a dull pain towards the right hypochondrium; it was most severe during the night. This pain was not accompanied by any very bad symptom for about two years. At the end of this time he began to lose flesh and strength. For six months he wasted away in this manner, without the appearance of any other local symptom; only, from time to time, he had returns of the diarrhœa. Appetite good; to recruit his strength, he still indulged in wine and spirituous liquors. Six months before coming to the hospital he perceived that he was yellow. The jaundice, which was at first slight, and limited to the face, afterwards became general and very marked. When we saw him first, his case was as follows:

His spirits were very good, and he was very confident of recovery: still he was very much emaciated; the greenish hue of his skin indicated a lesion of the liver. On a line with the last ribs on the right side, and in the hypochondrium, there was a sort of weight, an unpleasant sensation rather than a real pain. We could not discover any tumour by manual examination; everywhere else the abdomen was soft and free from pain. Appetite still good. For several months he had been constipated; no trace of dropsy; pulse not frequent nor skin hot; urine red and scanty. After being a month in the hospital, without presenting any change, his respiration became suddenly embarrassed, without any previous stitch in the side, or any characteristic sputa; auscultation first detected a crepitous râle, and afterwards well-marked bronchial respiration in the space included between the right clavicle and the mamma of the same side, and posteriorly in the supra and infra-spinous fossæ. Dull sound over the same space; at the same time features became very much changed; pulse thready; erysipelas of the face, accompanied with increased prostration. He died on the sixth day after the appearance of the dyspnœa.

Post mortem. Great emaciation; abdominal parietes retracted; marked greenish-yellow tinge of the skin; no trace of dropsy. The liver, viewed externally, was healthy; it was of its natural size and colour; but scarcely had the scalpel entered it to the depth of eight or ten lines, when, immediately to the right of the great suspensory ligament, a liquid was observed to gush forth with violence, as clear as crystal, and we found that it came from a pouch large enough to hold an orange, and which was filled with seven or eight acephalocysts, one of which was much larger than the others. This large hydatid was hollow, and it was from it that the clear liquid above mentioned seemed to come; that surrounding the hydatids, and contained in the pouch itself, was yellowish and turbid. The parietes of this pouch were formed of a fibrous, dense, resisting membrane, several lines in thickness, in contact at its external surface with the parenchyma of the liver, to which it was united by some cellulo-vascular filaments. Smooth on its inner surface, where it presented a serous organisation, it was bathed in the fluids in which hydatids float. The spleen, healthy on the outside, when cut into, allowed a fluid to escape similar to that which came from the liver. This liquid came from a large acephalocyst, which contained several others, and which was contained in a cavity in the splenic parenchyma; this cavity differed from that found in the liver in its parietes being lined only with a very thin cellular membrane. In the lower fifth of the small intestine Peyer's glands were found larger than usual, uneven on the surface, some of a greyish white, and others blackish. In this same portion of the intestine isolated follicles were found very apparent, presenting a central black point, and a circle of the same colour on their circumference. The inner surface of the cæcum, and of a portion of the colon, presented a slate-coloured tint. Grey hepatisation of the upper lobe of the right lung. Some whitish flocculi in the pleura of the same side, with redness of this membrane.

One fact should strike us in the case now read; the impossibility of detecting, by any distinctive sign during life, the species of change which the liver had undergone. What do we find, in fact, as a symptom of the disease of the liver? Nothing else but what the preceding cases have shown to us, where, notwithstanding the organic lesion was very different, these symptoms may be reduced to an obscure pain, with jaundice. Thus, then, whether there be simple sanguineous congestion of the liver, hypertrophy or atrophy, induration or softening of its parenchyma, formation of abscess, or development of cancerous tumours in its interior, production of hydatids, &c., symptoms sometimes different, but oftentimes identical, are the result of these infinitely varying lesions. No doubt it would be easier and more convenient to the observer to be able to assign to each of these lesions a particular group of symptoms; to say, for instance, that lancinating pains uniformly characterise cancer of the liver, that hydatids are always free from pain, &c.: this is, to be sure, most generally the case; but, on the other hand, there are cancers of the liver unattended with pain, and we see hydatids accompanied with pains sometimes very acute in the different stages of their existence. The knowledge of the exceptional cases is of great importance to the practitioner for the certainty of his diagnosis.

Another circumstance of this case, well worthy of remark, is the intestinal inflammation which here preceded the development of hydatids in the liver, as it very frequently precedes the development of an ordinary hepatitis, whether acute or chronic. On this point we may refer to the cases already cited elsewhere, and in which we have seen abscesses of the liver, hydatids of this organ, atrophy, and, in a word, cancerous degenerescence of its parenchyma, become developed under the influence of one and the same order of causes, namely, external violence.

Pain was for a long time the only phenomenon which indicated the existence of an affection of the liver ; this pain, according to the patient's account, was more severe during the night ; a fact which, added to several others, may serve to prove that this character of the pain, of increasing during the night, is not peculiar to syphilitic pains. We often observe it, for instance, in the cases of simple rheumatic pains. It is remarkable, moreover, that the same hydatids, the development of which in the liver had been accompanied with pain, did not occasion any in the spleen.

It would be very difficult to account for the production of the jaundice in this case, where the affection of the liver had left the greater part of the parenchyma perfectly healthy, and where the bile ducts were also exempt from any kind of lesion.

The individual was very much wasted, and was advancing slowly towards the grave, but nothing as yet indicated his approaching dissolution. The great functions, those whose integrity is most essential to the support of life, were not yet compromised. Thus the circulation was not disturbed, notwithstanding the twofold pathological process of which the liver and the spleen were the principal seats ; the breathing remained free ; the gastric digestion (a thing remarkable in a disease of such long continuance) was duly performed ; there was a desire for food ; chylification seemed to be performed ; but the matter formed in the intestine, and absorbed, was to no purpose carried by the blood to the different organs ; it did not assimilate with their tissue. In this case the normal performance of the general movement of nutrition was impeded by the abnormal movement of nutrition which took place in the liver and the spleen.

It was in this state of things that an acute inflammation attacked a portion of the pulmonary parenchyma. Here, as in many other cases where pneumonia complicates a chronic disease, the symptoms of the inflammation are far from being clearly marked. We observe no characteristic expectoration, no pain, though, after death, undoubted traces of inflammation have been found in the pleura : we merely observe severe dyspnœa ; and further, in this individual, who was already exhausted, the pulmonary inflammation occasioned a sudden sinking of the strength, an adynamic state, which the erysipelas of the face contributed to increase. These same symptoms are frequently occasioned under similar circumstances by a gastric or intestinal inflammation.

It must not be forgotten that, for a long time, the patient was subject to a diarrhœa, which was succeeded at intervals by constipation. The unusual development of Peyer's glands, hypertrophy of other separated follicles, with the appearance of a black colour at their centre and circumference, the slate-coloured tint of a part of the large intestine, are so many lesions which indicated an old inflammatory state of the digestive tube.

CASE 28.—*Hydatids of the liver developed without symptoms—Acute peritonitis consecutive on the opening of the hydatid pouch into the peritoneum.*

A female, twenty-seven years old, entered the Charité with all the symptoms of pulmonary phthisis in an advanced stage : a cavity in the upper lobe of the lung ; diarrhœa, sweats, hectic fever, little appetite ; abdomen soft and free from pain in every part. This woman was declining slowly, when she was suddenly seized, without any known cause, with an acute abdominal pain, increased by the least pressure. For the four days following the commencement of this pain the abdomen was observed to swell, always continuing very painful ; pulse became very frequent and weak. She died whilst vomiting some greenish bile.

Post mortem. Turbid flocculent serum in the peritoneum ; intestinal convolutions united by white unorganised pseudo membranes of recent formation. On raising the liver we were not a little surprised to find, on the lower surface, a little to the right of the gall-bladder, a solution of continuity, which might have admitted the end of three fingers joined together, and which led into a large cavity filled with burst hydatids. We then thought that the peritonitis was owing to the opening of the hydatid sac into the cavity of the serous membrane. Further examination detected shreds of hydatid membranes floating in the peritoneal serum. Traces of inflammation of the gastro-intestinal mucous membrane. Tubercles in different stages in the lungs.

This case is remarkable in two points of view :—First, it shows that hydatids may form in the liver, be developed there, and attain considerable size, without occasioning any symptoms ; and in this respect it will not be uninteresting to compare the preceding with the present case. In the preceding case we saw that these same hydatids had produced pain in the region of the liver, and also jaundice. With respect to the wasting of the patient, we cannot know, in this case, what share the affection of the liver had in its production in consequence of the accompanying disease of the lungs. Why, in one of these cases, was there pain and jaundice ? why, in the other, did none of these symptoms exist ? The organic changes were still the same. Secondly, this case, moreover, affords an instance of peritonitis produced by the opening of a cavity formed in the liver into the peritoneum, and by the serous membrane of the foreign bodies passing into this cavity.

Case 29.—*Hydatids of the liver, with considerable development of this organ, and suppuration in the hydatid cavity—Tumour, unattended with pain or fever, for a long time ; at a subsequent period, pain and fever.*

A middle-aged man entered the Charité in the following state :—A considerable tumour occupied the right hypochondrium as well as the epigastrium ; it advanced a little towards the left hypochondrium, and it descended as low as the umbilicus; superiorly it appeared to be continued, and lost behind the ribs. This tumour was smooth, presented no knobs ; pressure, however severe, gave no pain. The patient told us that, for the last two years nearly, he had perceived the existence of this tumour, which was constantly free from pain, and had increased gradually, without the digestive functions having ever been seriously affected. But he gradually lost flesh and strength ; pulse not frequent ; skin dry, not hot ; no jaundice at any time ; tongue whitish ; no thirst ; appetite rather good ; stools natural. From the situation of the tumour, its form, and its relations, we were disposed to think that it was nothing but the liver unusually enlarged. (Leeches were applied several times over the right hypochondrium, or to the anus ; stimulating frictions to the skin were ordered ; purgative pills given.) One day we were struck with the great alteration in the features of the face, which, having been of rather a good colour till then, became remarkably pale ; pulse now frequent; a dry burning heat in the palms of the hands. For some days back the patient felt, in the right hypochondrium, which till then was free from pain, a somewhat acute pain, which, being worse at intervals, was then become lancinating. From the absence of any new symptoms, it was evident that the cause of the unfavourable change in the features of the face and of the fever depended on a new morbid process set up in the liver. Leeches were again applied over the hypochondrium, which was afterwards covered with emollient and narcotic cataplasms. The pain and fever were still worse on the next day. He was then bled from the arm ; afterwards leeches were again applied over the hypochondrium ; blisters to the legs ; frictions with tartar-emetic, on the right hypochondrium. All the symptoms became worse ; diarrhœa set in ; and he died in a few days.

Post mortem. The liver occupied all the space included between the edge of the false ribs of the right side superiorly, and a line supposed to be drawn from the superior crest of the ileum towards the umbilicus. Thus it was it, then, that constituted the tumour during life. In one point of its convex surface, towards the middle of its right lobe, it presented a manifest fluctuation. Where this did exist, there was found, instead of the parenchyma of the liver, a cavity which might have held two oranges, and which contained two distinct matters; first, white creamy pus, of good consistence and inodorous; secondly, in the midst of this pus hydatids, some of which were still entire, the greater part of which consisted of debris of membranes rolled on each other. Those which were entire presented this remarkable circumstance, that several points of their parietes were opaque, and of a milky-white colour. After this cavity had been emptied, its parietes were found to be lined merely with a layer of concrete pus, and beneath this layer was the parenchyma of the liver redder and more friable, to the extent of some lines around the cavity, than anywhere else. Towards the centre of the left lobe a second cavity was found full of hydatids still entire. The parietes of this cavity were lined with a real fibrous membrane, and around it no appreciable alteration was found of the hepatic parenchyma. White softening of the gastric mucous membrane towards the great cul-de-sac; red spots over the large intestine.

There are two periods to be distinguished in this case. In the first we perceive a considerable tumour in the right hypochondrium; and there is no other serious symptom, except the progressive emaciation and the gradual loss of strength. In the second period pain and fever set in, all the functions become gradually deteriorated, and death succeeds to a diarrhœa. We think we may easily account for the symptoms of these two periods by the lesions found on the dead body. It seems probable that, in the period during which there was neither pain nor fever, the liver contained nothing but hydatids; at a subsequent period pus came to be secreted around these entozoaires; thence fever, pain, and that series of symptoms which generally accompany every suppuration. This is not the only case wherein we have observed divers new products become developed around hydatids, pus as well as tuberculous matter. We shall annex to this the history of another case recently communicated by Dr. Descieux. In this, as well as in that now cited, one and the same cavity contained pus and hydatids at one and the same time.

An inhabitant of Montfort-Lamaury laboured for more than twenty years under what are called obstructions: seven years ago he passed hydatids by the anus; he was very unhappy in his state. Three fourths of the upper part of the abdomen were occupied by a knobby tumour, the seat of which could not readily be determined. About two months before this case was written the patient felt acute pains in the abdomen, and fever set in; seven weeks after these symptoms appeared, one of the most prominent knobs of the tumour became fluctuating; he experienced very acute pains in the part. An incision was made on the summit of the tumour; this incision was made four fingers' breadth from the linea alba of the left side. A large quantity of pus gushed from it, and a brown liquid, similar to that which is sometimes met with in ovarian cysts; membranes also, several inches in length, escaped from it, of a yellowish colour, and altogether resembling the debris of hydatids; they were soft and friable, and had lost their consistence. M. Descieux considered them to be dead hydatids. During the four following days, pus and some debris of hydatids flowed in abundance between the lips of the incision. At the time this case was written the discharge consisted merely of pus without any admixture of hydatids. The abdomen was soft, and very little painful; all the knobs disappeared; the patient was still very weak, but not feverish; the evacuations were free.

SECTION IV.

DISEASES OF THE EXCRETORY PASSAGES OF THE BILE.

The different tissues which enter into the composition of the parietes of the gall-bladder, as well as the ductus choledochus, cysticus and hepaticus, may be attacked, separately or simultaneously, with acute or chronic inflammation. This inflammation may be limited to a more or less circumscribed point of the gall-bladder or ducts; it may also attack them through their entire extent. Sometimes, whether by mere anatomical inspection, or by the study of the symptoms, one is led to admit that inflammation of the passages for the excretion of bile is consecutive on an inflammation of the duodenum; sometimes, on the contrary, there is nothing to prove this dependence; there is nothing to prove that the inflammatory process which has attacked these passages of excretion is not primary. Is it not thus with external parts? And if, for instance, observation teaches us that in a very great number of cases inflammation of the passages for the excretion of serum or saliva is consecutive on a uretritis or a stomatitis, are there not other cases also where either acute or chronic engorgement of the testicle, or an inflammation of Stheno's duct, or of the ducts which by their union form it, are seen to supervene, without there having been any previous inflammation of the urethra or of the cavity of the mouth?

The changes of texture induced by inflammation in the passages for the excretion of bile are numerous, and of several kinds. First, they may be limited to the mucous membrane, or extended to the subjacent tissues.

The mucous membrane may be ulcerated, as M. Louis has proved by several cases; we have found it considerably tumefied, thickened, and hypertrophied, after different acute or chronic inflammations. If this increase in thickness exists only in the portion of membrane which lines the inner surface of the gall-bladder, no particular phenomenon results from it; but the same cannot be said with respect to the ducts, whose mucous membrane cannot be tumefied without complete or partial, permanent or temporary, obliteration of these ducts.

The tissues subjacent to the mucous membrane may also undergo different species of change. In the gall-bladder we have several times found them infiltrated with serum, and once with purulent matter. In this same gall-bladder we have seen them sometimes softened, extensively ulcerated and perforated simultaneously with the mucous membrane, which occasioned an effusion of bile into the peritoneum; sometimes very much thickened, indurated, and scirrhous; at other times changed into fibrous or cartilaginous tissues, or studded with bony depositions; on another occasion reddish fibres of a muscular appearance were observed on the parietes of the gall-bladder. In the ductus hepaticus, cysticus and choledochus, the submucous cellular tissue may also be either softened and destroyed simultaneously with the mucous membrane, occasioning perforation of some point of the parietes, or be thickened, and indurated, and thus produce obliteration of these ducts in the same way as, in the canal of the urethra, certain indurations of the submucous cellular tissue frequently cause it to be very much diminished.

In some cases all trace is lost of the cavity either of the ductus hepaticus, cysticus or choledochus. In their stead nothing is found but a mere fibrous chord. The cavity of the gall-bladder may also be very much diminished, be even completely effaced, and, where it did exist, it sometimes happens that nothing is found but a small body, in which the cystic duct itself, also obliterated, terminates; it may disappear still more completely, and the depression in which it was lodged may be occupied by cellular tissue more or less condensed.

At other times, on the contrary, the cavity of the gall-bladder is found much larger than usual; this appears to happen chiefly in cases where, there being an obstacle to the free passage of the bile into the ductus choledochus, this liquid flows back, and accumulates in the gall-bladder, from which it can no longer make its exit, so as to flow into the duodenum.

This same increase of size may also exist in portions even of the biliary ducts which are situate behind an obstacle. In one case, where a calculus closed up the duodenal orifice of the ductus choledochus, we found this duct so dilated through the remainder of its extent that its diameter equalled that of the vena portæ.

Every one knows that the materials of the bile may become solidified in the excretory passages, so as to form calculi, which vary very much in their chemical composition, in their form, colour, dimensions, number, seat, etc. We shall not here enter into the history of biliary calculi. We shall merely call the attention of chemists to a white calculus, composed merely of phosphate of lime found by us in a gall-bladder, which contained nothing around it but a little mucus. In another case we found the gall-bladder filled with pus instead of bile.

The symptoms occasioned by the different alterations in the excretory passages of the bile now considered vary according to the nature and seat of these alterations.

The gall-bladder may be filled with calculi, and even with pus; its parietes may be the seat of different alterations; its cavity may have diminished considerably, or even have disappeared; it may cease to receive any bile in consequence of the obliteration of the cystic duct, without any of these lesions producing during life any morbid phenomenon which could indicate them.

The gall-bladder distended very much by bile or by other matter (calculi, pus, etc.) may pass beyond the edge of the liver, and form a tumour in different points of the abdomen, where it becomes sensible to manual examination. We have detected it, 1st, immediately beneath the cartilaginous edge of the ribs of the right side; 2ndly, lower down in the hypochondrium, either directly perpendicularly downwards, and corresponding to the place it usually occupies, or inclined considerably backwards or forwards; projecting, for instance, into the epigastrium; 3rdly, we have seen it touch the crest of the ileum, and even descend before it as far as the iliac fossa.

This tumour thus formed by the gall-bladder may not disappear, once it has shown itself. At other times it is observed to disappear after a longer or shorter time. This disappearance comes on principally under the following circumstances: 1st, when the obstacle which prevented the passage of the bile into the ductus choledochus ceases to exist; 2ndly, when the bile, at first accumulated in its reservoir, becomes afterwards absorbed, and the gall-bladder, no longer receiving any additional bile, has a tendency to become atrophied; 3rdly, when the parietes of this same gall-bladder, distended, and more or less changed, come to be perforated; whence there is a flow of bile either into the peritoneum, or into some other hollow organ, with whose cavity the gall-bladder accidentally communicates, or externally, in the case where adhesions are previously established between the gall-bladder and the abdominal parietes; and the latter have in their turn become inflamed, ulcerated from within outwards, and perforated.

In speaking of the different changes which may affect the hepatic parenchyma, we stated that jaundice might come on in all, but was not necessarily the result of any. Observation proves, on the contrary, that every time there is obliteration either of the ductus hepaticus, or ductus choledochus, jaundice is produced. This obliteration may be occasioned either by a foreign body which obstructs the cavity of the ducts, or by tumours which compress it from without inwards, or by a process of inflammation which has produced engorgement and thickening of the mucous membrane, or that of the subjacent tissues. It may be readily seen that jaundice, owing to obliteration by one of these causes, must be, as the obliteration itself, temporary or permanent.

Some persons have admitted a jaundice from spasm of the bile ducts; but this spasm has rather been asserted than proved; and whilst we admitted that, under the influence of certain modifications of the nervous system, the liver may be changed in its mode of secretion, so as to occasion jaundice; we think that the cause of the production of this jaundice resides within the parenchyma of the organ, where the act of secretion is going on, and not in the excretory passages of the bile, the spasmodic contraction of which appears to be a mere hypothesis.

It follows, as a corollary, from our observations, that in a very great number of cases jaundice is produced, and continues a longer or shorter time without there being any appreciable obstacle in the excretory passages of the bile. The truth of this has also been admitted by M. Louis.

The following cases will point out the most important lesions which the excretory passages of the bile may undergo, and the different symptoms to which these lesions may give rise.

Case 30.—*Acute inflammation of the ductus choledochus; obliteration of its cavity—Rupture of the ductus hepaticus by distension of its parietes—Jaundice, with pain in the right hypochondrium, and a tumour in this same region formed by the gall-bladder—Peritonitis.*

A shoe-maker, thirty-five years of age, entered the Charité November 8th. Six days before, after an excess at table, he was seized with an acute pain to the right of the epigastrium, a little below the edge of the ribs. On the day after, he perceived that his skin was of a yellow colour. November 9th he presented the following state; yellow tint of the conjunctivæ and of the entire cutaneous surface; dull pain in the right hypochondrium; beneath the anterior extremity of the eleventh rib a pyriform tumour is felt, moveable under the finger, not painful; the large extremity of which passes a little below the line of the umbilicus, the small extremity being lost behind the ribs. Tongue natural, thirst not great; appetite none, stools scanty, and devoid of colour. Pulse frequent, skin hot and dry. We considered the tumour of the hypochondrium produced by the gall-bladder filled with bile (leeches to the anus; whey with acetate of potass; strict diet). The four following days the tumour increased; no other change took place. On the 13th, he was seized on a sudden with a much more acute pain, which, setting out from the hepatic region, soon involved the entire abdomen. When we saw the patient on the next morning, this pain still continued; its extreme acuteness, and its being increased by the least pressure, sufficiently proved that it was occasioned by peritoneal inflammation; at the same time the face was pale, features sharpened, and very much changed, great anxiety; pulse small and very frequent; extremities now cold, (two blisters to the legs, twenty leeches over the abdomen). He died in the afternoon.

Post mortem. The peritoneum was filled with a purulent liquid, the colour of which was in general yellow, but much more so in the right flank. The inner surface of the duodenum presented an entirely red colour. The point where the ductus choledochus opened, and which, under ordinary circumstances, is found very readily, was marked by a small rounded tumour, pierced at its centre by a sort of capillary orifice, the breadth of a line at most, and raised about three lines above the level of the intestinal surface. A very fine probe introduced into the orifice, on the centre of this tumour, at first met no cavity. However, when pushed in with force, it appeared to get clear of some obstacle, and was soon in the ductus choledochus, the extent of which it traversed with some difficulty, as if the ordinary cavity of the canal was effaced, and as if the probe restored it a little according as it was pushed carefully from the intestine towards the liver. When cut into in different directions, the ductus choledochus presented an almost imperceptible cavity; its parietes were considerably thickened, they were very friable, and very easily torn. On the contrary, the ductus hepaticus and cysticus were considerably increased in size, as also the gall-bladder. A little before the union of these two ducts, the hepatic duct presented a solution of continuity of an irregularly-rounded form, and large enough to admit a small pea. The texture of the parietes of the canal around this perforation did not appear changed. The cause of the peritonitis was now very evident. Some red patches on the mucous membrane of the stomach.

There are few cases wherein the symptoms observed during life correspond so accurately with the lesions found on the dead body. In consequence of an irregularity in diet, the stomach and duodenum became inflamed; the inflammation, which was but slightly marked in the first of these organs, became much more severe in the second; the irritation of the duodenal mucous membrane extended, by continuity of tissue, to the portion of membrane lining the ductus choledochus. Thus the lachrymal ducts are inflamed in ophthalmia, and the seminal ducts in urethritis; thence engorgement of the mucous membrane, obliteration of the cavity of the ductus choledochus, and consequent accumulation of bile in the gall-bladder, formation of the tumour in the hypochondrium, probable reabsorption of another portion of the bile, and production of jaundice. With respect to the hepatic duct, its increased capacity seems to prove that it had been very much distended with bile. Was this distension pushed far enough to occasion rupture of the parietes? One may suppose it, in consequence of their attenuation. Another remarkable circumstance is, that the inflammation, which was very severe throughout the entire ductus choledochus, was confined to this duct, and that the hepatic and cystic ducts were entirely exempt from it. Other mucous surfaces also present frequent instances of inflammation, the seat of which is found to be accurately circumscribed, as here. Thus, in the great majority of cases of gastritis, the redness of the mucous membrane terminates abruptly, on the one hand, at the cardia, and, on the other hand, at the pylorus. Thus, it is not uncommon to see one of the surfaces of the ileo-cæcal valve present a bright red colour, whilst the other surface is white. This change of colour occurs abruptly. No shade, no intermediate tint, separates the inflamed from the healthy spot.

CASE 31.—*Chronic inflammation of the ductus choledochus and cysticus: obliteration of their cavity by thickening of the parietes; softening and rupture of the parietes of the gall-bladder—Jaundice—Super-acute peritonitis.*

A man, sixty-four years of age, entered the Charité in December 1821. Three months before, he had been seized, without any known cause, with bilious vomiting, which lasted several days. This ceased spontaneously, but was succeeded by profuse diarrhœa, which continued about a month, and exhausted the patient. Towards the middle of September the diarrhœa diminished, but the patient's strength did not return. Appetite was nearly gone, and digestion of food became difficult. Yellow tint of eyes, and of the entire skin then began to be perceptible. At the time of his entering the hospital he presented the following state:—The entire skin was of a yellow colour, bordering a little on green; emaciation considerable; tongue nearly natural, but there was complete anorexia. The little food which he took occasioned in the epigastric region a sensation of weight and heat, which lasted for several hours. Stools scanty, of an ashy grey colour. The abdomen, when carefully examined, presented no tumour; it was every where soft and free from pain. The pulse became a little accelerated only towards evening. A blister applied over the epigastrium was of some effect in assisting digestion. Leeches had been applied without any advantage. Milk and soups were his principal diet. About fifteen days after his admission the state of the stomach seemed to be improved; the evening fever was much less marked, but the jaundice continued; the strength did not return; emaciation increased. One morning, when attempting to sit down, he felt at once a sort of *tearing* in the right hypochondrium. Some minutes after an acute pain was felt at first in the right side, then all over the abdomen. On the next morning he presented all the symptoms of acute peritonitis. From the sudden way in which it had commenced, and the well-marked sensation of tearing experienced by the patient, we were disposed to refer it to intestinal perforation as its cause. He died during the night.

Post mortem.—A great quantity of a dirty grey liquid was effused into the peritoneum, which had been already covered with membraniform concretions in several points. The gall-bladder, which was very much reduced in size, presented in its lower surface, not far from its large extremity, a solution of continuity about the breadth of a five-sous piece. The parietes of the gall-bladder were remarkable for their great friability. On endeavouring to penetrate from the interior of the gall-bladder into the cystic duct, we could not enter it. Then making an incision in the ductus choledochus, to ascend from this duct into the cystic, we discovered that the cavity of these two ducts was become so small, that it was impossible to introduce the finest probe into it. This almost total obliteration was produced by thickening of their parietes. The ductus hepaticus, on the contrary, was very much dilated, and filled with biliary concretions. The mucous membrane of the stomach was of a slate colour, and was very much thickened, as were also the subjacent cellular and muscular tunics; the dura mater was very yellow.

Here again an almost total obliteration of a portion of the bile ducts was occasioned, very probably, by an inflammatory state of these ducts. The disease first appeared under the form of a simple gastro-intestinal inflammation; this inflammation soon extended to the bile ducts; and their engorgement produced the jaundice: this case, however, differs from others which we have seen in this, that here the inflammation passed into the chronic state, and after lasting several months produced such thickening of the bile ducts, that if the patient had lived some months longer, it is probable that their obliteration would have been complete, and they would have been found changed into a sort of ligamentous cord. The obliteration of the cystic canal explains why, in this case, the gall-bladder, far from being distended and forming a tumour, was, on the contrary, found to be very much reduced in size. The parietes, which were softened and friable, seemed to have participated in the inflammation of the ductus cysticus and choledochus; only the inflammatory process which had thickened and hardened the parietes of these ducts, had, on the contrary, softened the parietes of the gall-bladder. We should not be astonished at these two opposite effects of inflammation in different parts of the same tissue; mucous membranes present frequent instances of the same thing. Thus the same symptoms of inflammation having existed, we sometimes find the gastric mucous membrane so softened, that it forms merely a sort of unorganised pulp; sometimes, on the contrary, it is found thicker and harder than natural; the same thing holds good in those individuals in whom these two morbid states are found combined in different parts of the stomach. The rupture of the softened parietes of the gall-bladder comes under the head of those cases of perforation of the stomach, where rupture of the parietes of this viscus is but the last degree of their softening.

CASE 32.—*Transformation of the cystic duct into a fibrous cord—Considerable dilatation of the ductus choledochus without the existence of any obstacle at its duodenal extremity: phosphate of lime calculi in the gall-bladder—Liver large and granulated—Ascites, no jaundice—Latent pericarditis.*

A merchant, fifty years of age, had been unfortunate in some speculations, and had, in consequence, suffered great mental disquietude—this was in 1815; his health, till then good, began to decline; he had jaundice, which was but temporary, then ascites.

In 1816 he had the operation of paracentesis performed twice during the nine years following his health was uniformly bad. In 1817 the ascites disappeared spontaneously, and did not return till some months before his admission into the hospital (1825).

When we saw him there was a large tumour in the right hypochondrium; it was felt as far as the vicinity of the umbilicus; it had never been painful. The abdomen was very much swollen, and evidently the seat of fluctuation. The extremities were not infiltrated; they were only once so in 1816. Tongue natural, appetite good, pulse very small, a little frequent; cough and short breathing since the last year. This patient had been but a few days in the hospital; he still retained some strength; he used to rise from bed, and walk about the ward, when one morning he was found in a state of coma; extremities cold, pulse imperceptible. He died two hours after the visit.

Post mortem. Abdomen very much depressed, which in the preceding visit we found considerably swollen. Face and limbs emaciated.

Cranium. Cellular adhesions of the arachnoid lining the dura mater to that lining the superior and lateral parts of the cerebral hemispheres; subarachnoid cellular tissue infiltrated with a considerable quantity of serum; the lateral ventricles also contained a considerable quantity; they remained dilated even after the fluid was allowed to escape.

Thorax. Old cellular adhesions of the pleuræ costalis and pulmonalis; numerous miliary tubercles on the centre of the upper lobes of each lung. Pericardium distended with three glasses of a red liquid, like blood as it comes from a vein. All the internal surface of the pericardium was lined with false membranes lying one on the other.

Abdomen. The peritoneum contained but a small quantity of serum. The liver was closely united by false membranes on the one hand to the diaphragm, and on the other hand to the spleen, stomach, and colon. Thick false membranes kept the gall-bladder from view, which being reduced to a very small size, contained merely some thready mucus, and three small concretions of a dull white colour, which were found to consist of phosphate of lime. The cystic duct was changed into a fibrous cord as far as its entrance into the hepatic duct; at the point, where these two ducts separated, a small calculus was found, similar to the ordinary biliary calculi. The ductus choledochus was three times its ordinary size. A hard tissue several lines in thickness, and of a scirrhous appearance, lay between the peritoneum which covers the two surfaces of the liver and the proper membrane of this viscus, which, beneath this accidental tissue, appeared in the form of a slightly undulating line. The liver was very large, and passed several fingers' breadth beyond the edge of the ribs; it extended into the left hypochondrium. Whence cut into indifferent directions, it everywhere presented a remarkably dense tissue of a greyish white colour, and streaked with a great number of granulations. Spleen very large; red spots in the duodenum.

Though this case is incomplete in several points, it possesses some interest in more than one respect. First, it will be observed that there was no jaundice here; and accordingly the cystic duct alone was obliterated. The bile no longer reached the gall-bladder, which contained merely some mucus, and concretions entirely foreign in their nature from biliary calculi. What was the cause of the great dilatation of the ductus choledochus? Was its cavity enlarged, in order to supply the gall-bladder, and to discharge by its increase of size the functions of a reservoir? In support of this idea it may be remarked, that, in several animals who have no gall-bladder, and in men who have been deprived of it, a similar dilatation of the ductus choledochus has been observed.

We have more frequently found such an enlargement of the cavity of the biliary ducts behind a calculus which obstructed some point of their extent. Among other cases of this kind, we may mention that of an individual, more than sixty years of age, whose gall-bladder and biliary ducts contained a great number of calculi. Several were accumulated towards the duodenal extremity of the ductus choledochus, and completely stopped up its orifice. This, when seen in the duodenum, was more apparent than usual, and presented at its circumference a sort of puffiness, which made it resemble the anus. Behind this collection of calculi, the ductus choledochus had undergone such dilatation, that its diameter equalled that of the vena portæ. The same may be said of the ductus cysticus and hepaticus. The branches which formed the latter, being filled with calculi, were also so dilated, that one of them when open might admit the index and middle finger united.

This case, again, presents another instance of the coincidence of a state of coma terminating in death, with the sudden disappearance of the liquid of a dropsy, without any supplementary evacuation being set up.

The false membranes, which surrounded the liver, and which united it to several neighbouring parts, were not indicated in their formation by any acute pain. The lesion of the pericardium was not less obscure. The pulmonary tubercles were not announced by any characteristic sign.

THIRD BOOK.

OBSERVATIONS ON PERITONITIS.

SECTION I.

ACUTE PERITONITIS.

In the following cases we shall endeavour to direct attention principally: 1st, to some of the causes which must frequently give rise to inflammation of the peritoneum; 2ndly, to the different symptoms which indicate the existence of this inflammation; 3rdly, to its progress, which, in certain cases, is so acute, that not very many hours intervene between the commencement of the disease and the patient's death, whilst at other times its fatal termination does not take place till after a lapse of from thirty to forty days.

CHAPTER I.

Case 1. *Acute peritonitis terminating in death.*

A boy, about fifteen years of age, of a delicate constitution, presenting no signs of puberty, a copperplate-printer, had been engaged at his usual occupation on the morning of the 30th of April: he had breakfasted as usual. Towards two o'clock in the afternoon, he felt suddenly in the right flank a pain so severe as to oblige him to go to bed. In the night, this pain extended to the right hypochondrium and epigastrium ; vomiting took place, and the patient began to sink very rapidly. These bad symptoms continued for the two following days, during which he kept his bed. He drank nothing but sugar and water. On May 2nd, we saw him for the first time when he presented the following state :

Face was pale, expressive of the most intense anxiety, eyes dull, surrounded with a very marked bluish circle; intellectual and sensorial faculties intact; abdomen tense and resisting, the slightest pressure occasioning the most intolerable pains over all the right side of the abdomen ; no perceptible fluctuation. Frequent vomiting of a green bile; constipation ; tongue moist and whitish ; pulse of moderate frequency, and of ordinary strength, and also regular ; skin hot and dry. (Bleeding to twelve ounces ; thirty leeches over the abdomen ; emollient fomentations; flax-seed lavements, with almond-oil, &c.) The blood taken from the vein presented a large buffy coagulum. The pains were somewhat diminished during the day ; at night he enjoyed a little sleep.

Next day twenty more leeches to the abdomen. The vomiting ceased in the day. Next day, expression of the face more natural; perceptible diminution of the abdominal pains ; the diminished frequency of the pulse, the improvement which the patient stated he felt, all indicated an evident amendment. Still the tension of the abdomen continued: the peritonitis had not, therefore, been resolved ; but it seemed disposed to pass into the chronic state. In the day, the improvement still kept up ; the skin was covered for the first time with a gentle moisture, and soon with a profuse sweat: this evacuation, which coincided with a perceptible improvement of all the symptoms, might be considered as a salutary critical movement. In the evening, the temperature which, had been very high all the day, suddenly fell ; the wind, entering through the open windows, affected the patient. The next day he was dying ; the face had undergone, since the preceding day, so great a change, that one could scarcely recognize him : all the skin was cold ; the extremities livid and icy : pulse imperceptible; the respiration, high and hurried, was performed solely by the movement of the ribs. Small quantities of bile were occasionally vomited. Tongue still moist; and the intelligence clear as ever. He died two hours after the visit.

Post mortem, twenty-two hours after death. Extremities still livid ; limbs rigid ; ventricles of the brain contained a very small quantity of serum. The right and left cavities of the heart contained some fibrinous, polypus-like coagula interlaced between the columnæ carneæ, and extending into the different vessels. The small intestines were distended with a great quantity of gas. The peritoneum covering them was very much injected, without a trace of any secretion. But on raising the intestines the right flank and right iliac region were found to be filled with a white liquid like milk : this same liquid was accumulated in the cavity of the pelvis as also in the left flank. The two surfaces of the stomach, the ascending colon, the convolutions of the small intestines contained in the pelvis, the convex surfaces of the liver and spleen, as well as the corresponding portions of the diaphragm, were lined with whitish membraniform concretions, which did not yet present any trace of organisation. The transverse colon adhered to the great curvature of the stomach by an albuminous band of considerable consistence.

The inner surface of the stomach was white, except in five or six places, each of which, on an average, was the breadth of a ten sous piece, where there appeared considerable redness owing to an agglomeration of small injected vessels : every where and even in these red parts the mucous membrane was of its natural thickness and consistence.

We have here a case of acute peritonitis, exempt from all complication, and accompanied with well-marked symptoms. Here there was no precursor ; none of those intermediate states between health and disease. The first morbid phenomenon was pain; at first partial, it soon became general and rather acute, accompanied with such distress as to oblige the patient instantly to keep his bed; this pain, moreover, had all the characters which belong to inflammation of the peritoneum; tension of the abdomen without perceptible fluctuation, profuse vomiting without any other sign of the gastric mucous membrane being affected; that peculiar alteration of the features, serve still more to confirm the diagnosis. Still, in the midst of this dangerous state, the pulse, which was of moderate frequency and of ordinary strength, announced nothing alarming; one would not have found it otherwise in case of a mere accession of fever; it was far from having that concentration and smallness said to be characteristic of peritonitis, and such indeed as it is generally found in this affection; a proof among many others that it is never from a single sign that any disease can be diagnosed. I think that in such a case as this all the science of Bordeu and Fouquet, with respect to the pulse, would have been deceived. I do not mean by this to say that the consideration of the arterial pulsations is unimportant; but I am disposed to think we should not lose sight of the fact, that the information furnished from this source, has been on more than one occasion altogether incorrect: this assertion is proved to be true in fact; in theory it must hold equally good, since in peritonitis, as in every other disease, the disturbance of the circulation is purely the result of sympathies, which must vary to an infinite degree with respect, first, to their very existence, secondly, with respect to their nature, and thirdly, with respect to their energy. Moreover, observation has taught us that every inflamed organ produces a special modification in the beats of the heart, both with respect to their strength, their frequency, and their rhythm; whence it follows that each species of inflammation is more frequently accompanied with such a pulse than with any other. Thus nothing can be less alike, in most cases, than the pulse of pneumonia compared with that of gastro-enteritis, or the pulse of pleuritis compared with the pulse of peritonitis; but it is no less true that we should come to extraordinary miscalculations, if we were not fully convinced that to these general rules there exist very numerous exceptions.

When this patient entered the Charité, his situation was very alarming: under the influence of active antiphlogistic treatment, a perceptible improvement took place. On the sixth day the inflammation was not resolved; but there was some ground for hopes that it would be cured or would pass into the chronic state, when, in consequence of a sudden interruption of the cutaneous transpiration, which had become very profuse since the improvement had taken place, the peritonitis again became acute and rapidly carried off the patient. The post mortem examination showed what is ordinarily found in cases of recent peritonitis whose progress is very acute, namely, pus and membraniform concretions not yet organised. Now, who can assign a precise term to the period when this organisation commences? There are some cases where only twenty hours after the commencement of an inflammation of the peritoneum, we have been able to trace and to inject vessels developed within the fibrinous concretion which had become a living tissue: there are other cases, where, several months after the attack of peritonitis, no traces of organisation have been found in the membraniform layers. No doubt there are good reasons for these differences; no doubt the degree of inflammation, the nature of the effusion, several local or general conditions which escape us, exercise considerable influence over the greater or less rapidity with which pseudo-membranes become organised; but certain as we are that these different effects imply the idea of different causes which produce them, we have not yet attained the power of determining these causes. And yet till this be determined, what shall we know? Nothing, but that under the influence of sanguineous congestion variable in intensity, the most different products may be formed. But whence comes this difference? We cannot tell, at least in the majority of cases, and yet it is evident that it is a point which it would be of the utmost importance to ascertain; for the sole consideration of the sanguineous congestion leads us to one single mode of treatment merely directed to combat it, and which like it, can vary only in degree. Other therapeutic views might probably arise from the knowledge of the causes under the influence of which one and the same sanguineous congestion existing, there is a specific difference in the products of this congestion.

Case 2.—A tiler, eighteen years of age, with brown skin, chestnut hair, muscles slightly developed, residing in Paris for the last two years, was in the habitual enjoyment of good health. On the 2nd of March, without any known cause, he began to complain of severe abdominal pains, which continued on the following days. These pains were not constant, and did not always occupy the same points of the abdomen, sometimes affecting the entire of it, sometimes confined to one or other hypochondrium, or to the flanks, or appearing beneath and around the umbilical region. He kept his room, but not his bed, and adopted no medical treatment for the five following days, during which time he vomited frequently. On the morning of the 9th he entered the Charité and presented the following state:—

Face flushed, though calm; muscular strength still retained; abdomen tense, resisting, without any appreciable alteration, exhibiting every where an acute sensibility which is increased by the slightest motion, or the least contact. Posteriorly, on both sides of the vertebral column, on a line with the last ribs, percussion is very painful. Pulse small, very frequent, a little irregular; skin dry and hot; there is at the same time a bitter taste on the mouth, a yellow coating on the tongue, constipation. Notwithstanding the long time which had elapsed since the invasion of the disease, the symptoms of peritonitis were still sufficiently acute to warrant us in expecting to derive benefit from blood-letting. (Thirty leeches over the abdomen, two demi-lavements of marshmallow root, with the addition of half an ounce of sweet almonds in each emollient fomentation over the abdomen, oil mixture, &c.)

The patient found considerable relief from the leeches. On the 10th, abdomen less tense, and much less painful. Pulse very small, and 140. His drinks had been several times vomited. Two stools. (Eight leeches to the anus.) On the three days following the vomiting ceased; the abdominal pains, which moderate pressure excited on the 11th, were no longer felt on the 12th on applying equal pressure. Pulse still frequent; profuse diarrhœa had now set in. Eight leeches were applied to the anus each of the first two days. Still the peritonitis which was no longer indicated by pain, was sufficiently characterised by the tension and resistance of the abdomen.

On the 14th. Abdomen tympanitic, and again painful. Twenty-four leeches over the hypogastrium, and on the next day the pain as well as the tympanitic state had ceased. Still the pulse was frequent, and the purging continued; the face was habitually red and moist. On the 14th, he desired to have some rice cream. After the visit he determined to leave the hospital, because he thought he was not allowed sufficient nourishment. For this purpose he arose from bed, dressed himself, and walked with a firm pace across the room. He was brought back, however, to his bed, and became more resigned. In the evening he began to vomit, and died on the morning of the 17th, the fifteenth day from the first appearance of the pains. We could not ascertain whether he had procured any food.

Post mortem. The parietal and visceral peritoneum were united by close adhesions. The intestines were glued together by white thick membraniform layers, which as yet presented no rudiment of organisation. Beneath them the cellular tissue between the serous membrane and the muscular tunic of the intestines presented a bright red injection. The pseudo-membranes, which united the latter, enclosed between them spaces, which contained a milk-like fluid. This liquid was in great quantity in the pelvis, in the two flanks, and between the superior surface of the liver and diaphragm. Stomach distended with gases. Peyer's plexus appeared under the form of black points crowded together. The mucous membrane of the large intestine presented a great number of small black points, separated the one from the other. and surrounded with a slight elevation of the mucous membrane.

In this patient the peritonitis had a different physiognomy, if we may be allowed the term, from that described in the first case. In this latter (first case), the pains attained all at once their maximum of intensity, and all at once they were accompanied with the most distressing symptoms. In the case now before us, there was, to be sure, simultaneous with the first pains, some vomiting, but the patient did not keep his bed; if he had fever at the moment it was slight; his pains disappeared at intervals, and when they did return, it was not always in the same points: by these characters they might be readily taken for what are called nervous or rheumatic pains, which, though remarkably severe, are not in general accompanied by any alarming symptom. It must be well known that such is the onset of certain inflammations of serous membranes; thus, in the case of arachnitis, the headach often precedes all the other symptoms by several days; thus also, in a preceding part of this work, we have cited cases of pleuritis, in which at first the patients had only moveable intermittent pains in several points of the thoracic parietes, without these pains being in the first instance accompanied by cough, dyspnœa, or fever; but afterwards they became constant, and fixed to one point, and then the ordinary symptoms of pleuritis became developed. When we saw the patient the peritoneal pain was very severe; immediately after the application of leeches over the abdomen it was lessened, and two days after it disappeared altogether, though the other symptoms of peritonitis still continued; the appearance of profuse diarrhœa coincided with the cessation of the pain. Still the disease was far from being cured; this was one of those cases where there is a transition from the acute to the chronic state: only this transition occurred more promptly than usual. This is one of those cases in which we have seen the peritoneal pain disappear very rapidly, after having been very intense, and without this disappearance being accompanied with any perceptible abatement of the other symptoms. Observe then with what facility this pain was again excited, which was in a manner but lulled for a while. The first time it was relieved by the application of leeches; a second time, this application was not made; the return of the pain and of the vomiting soon followed a strong mental excitement, and a momentary exertion made by the patient. This new relapse carried him off, and it would be difficult to say what was the cause of death here, since a few hours before he died he possessed considerable strength, and the post mortem showed no lesion in any organ but in the peritoneum; the lungs in particular were not even engorged. Thus, this individual passed without a struggle from life to death amidst intense pains, indicated by the continual cries he uttered a few hours before death. He did not die of exhaustion, since a few hours previously he was able to put on his clothes and walk.

We may be satisfied in this case, that the vomiting which so often accompanies peritonitis in its different stages, is far from being always connected with gastric inflammation: for the patient vomited up to the last moment, and yet the gastric mucous membrane was found perfectly healthy. See also how little marked was the morbid change in the intestines (simple hypertrophy of the follicles with black colouring around them), though a profuse diarrhœa had existed for several days. To conclude, we may find in the existence of the numerous cells within which the effused liquid was as it were imprisoned, a cause of the obscurity of the fluctuation, in more than one case of peritonitis, where, as in the case now under consideration, the purulent or serous collection was still rather considerable. Here again we find no trace of organisation in the false membranes, and yet the patient did not die till the seventeenth day.

Case 3.—A looking-glass-maker, nineteen years of age, had been engaged in handling mercury during the winter of 1822, and he slept in a bed-room which contained some; severe tremors soon affected his limbs, which ceased, however, when he discontinued his work. Still he retained a state of general debility, he had no appetite. On the 29th of June he was seized without any known cause with acute abdominal pains and vomiting. On the 1st of July he presented the following state.

The face pale and sharpened, was expressive of the most acute anxiety: the slightest pressure occasioned most intense pain in the abdomen; abdomen tense, tympanitic in the course of the colon, without any perceptible fluctuation. Tongue red and a little dry, great thirst; a considerable quantity of green bile had been vomited several times during the last twenty-four hours; no alvine evacuation during the last two days. Pulse frequent and small, skin dry and hot; (venesection to sixteen ounces; thirty leeches over the abdomen; two ounces of castor oil in divided doses; solution of syrup of gum acidulated with lemon juice, four emollient demi-lavements; emollient fomentations over the abdomen).

The blood drawn from the vein collected into a large coagulum covered with a thin buffy coat; he again vomited some green bile in the course of the day, and had five or six stools.

On the second the general symptoms were all amended, but the pain and tension of the abdomen still continued; (sixty leeches over the abdomen); up to the day he had nausea, but no vomiting; after the leeches he became very much exhausted; pulse, which were hardly perceptible, was now very frequent; the extremities became icy cold; and the next morning his features were entirely changed, he appeared to be dying (one ounce of castor-oil, drinks and fomentations as before; sinapisms to the legs). In the course of the day his strength rallied and on the morning of the 4th of July there was an evident improvement. A profuse sweat in the night; for the first time he enjoyed some sleep. From the seventh to the fourteenth day the symptoms of acute peritonitis seemed to improve; from the twelfth day some nourishment was allowed (rice-cream); from the fourteenth to the twenty-fourth day the abdomen diminished in size, and was nearly free from pain; diarrhœa still; on the twenty-fifth day he took some panado, but vomited it. During the twelve first days of August the abdomen became still more soft, and was now free from pain in every part. This individual reached the forty-fifth day of his peritonitis, and every thing seemed to announce a favourable termination, when he had the folly to commit an error in regimen, by eating a leg of a chicken. Immediately the vomiting and diarrhœa returned, and severe fever set in. On the morning of the forty-sixth this still continued, and at the same time the breathing was short and hurried; he coughed without expectorating, and complained of smothering. Still the abdomen was neither more tense nor more painful; he now became very much exhausted again. Percussion of the chest detected a diminution in its sonorousness on the left posteriorly, nearly over the entire lower lobe of the lung of this side; in the same space a mixture of the mucous and crepitous râle was heard. (Venesection to twelve ounces.)

On the two following days the pectoral symptoms improved; his breathing, however, was evidently shorter than before his last relapse; and besides auscultation and percussion continued to indicate an inflammatory engorgement of a portion of the left lung. This pneumonia remained latent for the fifteen days following (end of August). His strength returned but in a slight degree; pulse still frequent; he was evidently under the influence of a chronic inflammation with local symptoms not well marked. At the commencement of September he committed another error in diet by eating some bad figs, by which he brought on a fit of indigestion. In sixty-eight hours his countenance assumed a cadaveric aspect, his extremities became cold, and he expired without a struggle.

Post mortem. The intestinal convolutions were united by false membranes, several of which had already a cellular appearance; numerous vessels were now seen to ramify over them; others, which were softer, and seemed to be of more recent formation, covered the convex surface of the liver; the flanks and cavity of the pelvis were filled with thick pus. Within four or five fingers' breadth of the ileo-cæcal valve there were four broad ulcerations, with white bottom, consisting of cellular tissue, and with edges a little brownish, on a level with the bottom. Another ulceration of the same appearance, the breadth of a thirty sous piece, was found immediately below the ileo-cæcal valve. The lower lobe of the left lung was impervoius to air, and presented a mixture of red and grey induration.

The disease which forms the subject of this case presents four periods for our consideration: 1st, that during which the peritonitis commenced and proceeded in an acute form; 2ndly, the period of the transition of this inflammation to a chronic state; 3rdly, another period, during which all the symptoms of peritonitis apparently leave the patient; 4thly, the last period, from the commencement of the pneumonia to the death of the individual.

In the first period we have to remark the sudden invasion of the abdominal pain, which suddenly acquired its greatest intensity; the vomitings which here coincided with the red and dry tongue, a circumstance which was not observed in the two preceding cases; the gradual improvement of the symptoms under the influence of copious blood-letting; the state of debility, apparently very great, into which the patient fell after the second of these bleedings, but which soon disappeared, and was followed by a perceptible amendment both in the local and general symptoms of the peritonitis.

In the second period we see the vomitings cease, the pains disappear, but the abdomen retain a degree of tension, still indicating the existence of the peritoneal inflammation. A fact, which seems of some importance, is the facility with which, in consequence of a very slight increase in the patient's usual diet the peritonitis repassed for a moment into the acute state.

Afterwards, the tension of the abdomen also disappeared; every thing seemed to announce a resolution of the peritonitis; yet the post mortem examination, which took place long after this, proved the existence of serious alterations in the peritoneum; namely, pus effused in different points of the cavity of this membrane. With respect to the cellular adhesions, they indicated the cure of the inflammation; we found similar adhesions in persons who several years before had had all the symptoms of an acute peritonitis, from which they recovered, and at the time we saw them they did not complain of any pain in the abdomen. If besides, these adhesions were very numerous—if they intimately united all the intestinal convolutions, we can readily conceive that the result might be, on the one hand, some modification in the form of the abdomen, habitual tension of the abdominal cavity, and on the other hand, more or less disturbance of the digestive functions. Be that as it may, from the case now under consideration, we shall draw this consequence, that when in an acute or chronic inflammation of the peritoneum all the local symptoms have disappeared, the morbid change of the peritoneum has not for that reason completely ceased to exist in all cases; this is applicable moreover to inflammations of all organs; there are few of them in which pathological anatomy has not proved that a residue of lesion may survive the local symptoms which announced it. What happens then? Most frequently in the absence of these symptoms, the suffering organ continues to exercise a mischievous influence either on the circulation, whence more or less fever is kept up, or on the function of nutrition, whence the strength and flesh are prevented from returning. However, as every acute symptom has disappeared, the individual is considered to be in a state of convalescence ; but such is far from being the case, and then the slightest deviation in diet, the least imprudence, occasions a relapse, which is but the rekindling of an inflammation, which was only quenched a little, but not entirely extinguished.

This deviation in regimen actually took place in our patient; but what was very remarkable, it was not the organ primarily affected that felt its pernicious influence ; thus the symptoms of peritonitis did not reappear. It was not even the intestinal mucous membrane that was affected ; but all the signs of acute pneumonia were seen to appear, which itself soon passed into the chronic state, and which, without the aid of auscultation and percussion, one would consider cured, as well as the peritonitis.

In this state of things, wherein several organs were found at one and the same time in a state of chronic inflammation, the least unusual shock given to the system, the least violence offered to this machine already deranged in several points, is sufficient to destroy it, by arresting probably the action of the nervous system, the functions of which had been for a long time perverted. How else are we to account for the manner in which this patient died after another deviation in regimen, and that without the symptoms of the triple affection of the lung, intestine, and peritoneum, being perceived to have been in the slightest degree aggravated ?

We cannot conclude these reflections, without remarking the ulcerations which were found towards the termination of the small intestine, and which were connected with a diarrhœa of long standing, which had ceased only at intervals. Compare now the state of the intestine in this patient, and in the preceding, who also had diarrhœa: the mode of alteration is very different.

CASE 4.—*Peritonitis by external violence.*

A middle-aged man, of a strong constitution, had received a kick of a horse in the abdomen, near the umbilical region ; no solution of continuity had been occasioned ; a large ecchymosis was produced on and around the part struck ; the patient instantly vomited several times, and about three hours after the accident, he felt very acute pains in the abdomen. In two days after he entered the Charité, presenting all the symptoms of acute peritonitis ; abdomen tense, tympanitic along the course of the colon, so painful that the weight of the bed-clothes could not be borne ; very frequent vomiting of green bile ; constipation ; face pale, and features sharpened ; pulse very frequent and weak ; skin not hot. The exhausted state of the patient prohibited general bleeding ; thirty leeches were applied over the abdomen, two blisters to the legs, emollient lavements and fomentations. In the twenty-four hours following no improvement took place, and he died on the fifth day.

Post mortem. Blackish, half-coagulated blood effused between the fibres of the muscles of the abdominal parietes. The peritoneum covering these parietes was raised by this blood and coloured by it on its external surface ; the cavity of the peritoneum was filled with a liquid resembling whey not clarified, in the midst of which whitish flocculi floated, several of which extended in layers over a great number of intestinal convolutions, over the ascending and descending colon, in the stomach and liver. In five or six places of these membraniform excretions some red points, very distinct, were observed, and in other parts some reddish lines. Beneath the pseudo-membrane the peritoneum presented considerable injection, the seat of which appeared to be the cellular tissue situate beneath it. Kidneys remarkably pale.

This case is remarkable for the cause which produced the peritonitis, for the rapid succession of the symptoms, and for the promptly fatal termination of the disease. Here there was no complication; the several phenomena and death were solely the result of the inflammation of the peritoneum, or, to speak more correctly, of the sympathetic disturbance occasioned by this inflammation in the nervous system; thence, the sudden sinking of the strength, the secession of the blood from the cutaneous capillaries, the suspension of the function of calorification, the weakness of the pulsations of the heart, which at the same time that they diminish in strength become more and more frequent. Thus then it is not solely on the rapidity of the circulation that the production of the heat of the skin depends. It is, moreover, only in a certain order of their functions that the nervous centres are modified; for up to the last moment no disturbance was observed in the intellectual and sensorial faculties; neither did the lungs present up to the last moment any disturbance in the performance of their functions; so that the respiration, without having been first altered, without any intermediate change between the healthy and morbid state, became extinct all at once with the pulsations of the heart; and life thus disappeared, without our finding any appreciable change in the organs, the sound state of which should be, one would suppose, a sufficient guarantee for its continuance.

We have already remarked in one of the preceding cases, the total absence of organisation in false membranes found in a case of peritonitis of considerably long standing. Here, on the contrary, where the attack of inflammation was of a much more recent date, the red points and lines found within several membraniform concretions were evidence of a process of organisation which was beginning to take place: this fact seems to me, moreover, to prove beyond all question, that the red part of the blood may form even in the midst of the false membranes, and that it is not necessarily brought to them by vessels from the serous membrane continued into the false membrane.

Case 5.—*Peritonitis, the attack of which coincided with the disappearance of articular rheumatism—Red effusion into the peritoneum—Malformation of the bladder.*

A man, fifty-seven years of age, labouring under an incontinence of urine of long standing, and having had purging at intervals, had acute articular rheumatism with fever, when he entered the Charité, the beginning of November. Several of the joints became swollen and painful. In a day or two the swelling and pain of the joints ceased all at once, when for the first time acute pains were felt in the abdomen; this became very severe; pressure did not increase nor lessen them. The face became pale and expressive of the greatest anxiety; pulse very frequent and hard; this was what the old physicians used to call *rheumatic metastasis.* The principal indication seemed to be to recall the irritation to its primary seat. Every means were resorted to in order to effect this, but without avail. The abdominal pains spread over all the parts of the abdomen and became extremely acute; the slightest pressure now aggravated them. The abdomen became very much enlarged, and there was evident fluctuation. There was some nausea without vomiting. He died before the termination of the 3rd day from the commencement of the attack.

Post mortem. Scarcely was an incision made into the abdominal parietes, when an immense quantity of a red fluid escaped through the opening, in the midst of which some white flocculi floated. The intestines were coloured red, and on the surface of several of the convolutions, membraniform concretions of a red colour were deposited. The liquid in the peritoneum resembled blood drawn from a vein; no coagulum was observed in it, nor was any large vessel found to be opened. The follicles of the end of the small intestine, cæcum, and commencement of the colon were enlarged; these follicles were bounded by a black circle; a black point was also observed in their centre. The summit of the bladder was surmounted by a large oval pouch, which extended behind the packet of the small intestines, and adhered by its upper extremity to the third portion of the duodenum. This adhesion was evidently of recent formation. This pouch internally resembled the bladder, and in its parietes we could easily trace the different tunics ordinarily found in the bladder ; its muscular fibres, however, were but little developed, and intermixed with much cellular tissue. This sort of supernumerary bladder communicated with the natural bladder by an aperture which was contracted by a thick ridge formed by the mucous membrane, and particularly by condensed cellular tissue. To the right of this opening, another small pouch, was found capable of containing a nut, which also communicated with the normal bladder ; it was separated from the great pouch by a partition which projected into its cavity.

In the preceding parts of this work I cited cases of pneumonia, pleuritis, pericarditis, the commencement of which coincided with the disappearance of acute rheumatic affections ; here we have a similar phenomenon, an attack of peritonitis succeeding to rheumatism. It matters but little whether we call this displacement of the disease metastasis or otherwise, provided the fact is not forgotten that the abrupt disappearance of rheumatism is often connected with the development of an internal inflammation, which, by reason of individual predisposition, attacks such or such an organ, principally serous membranes. The first day the abdominal pains were felt by our patient, they resembled what is commonly called rheumatism fixed on the intestines : what was particularly remarkable in these pains was, that pressure did not increase them ; and in this state of things, it was not certain that there was peritonitis, and the prognosis was not yet decidedly bad. It is quite certain, that in many cases where, as here, acute and violent pains are suddenly felt in the abdomen, in persons either at the time labouring or who formerly laboured under rheumatism, these pains disappear more or less promptly, without leaving behind them any trace of disease ; and then it is at least doubtful, whether they are the result of peritoneal inflammation. But in the patient who forms the subject of the present case, it was not so ; and from the second day of the appearance of these pains, the existence of peritonitis could not longer be called in doubt : fluctuation was felt in the abdomen, and the evidence of this fluctuation was itself a remarkable circumstance ; for it generally happens that during the first days of the existence of peritonitis, the abdominal effusions being but inconsiderable, may be rather recognised by the tension and resistance of the parietes, the change in the form of the abdomen, than by any great increase in its size or by the existence of fluctuation. Here it was otherwise, and the nature of the liquid found in the peritoneum sufficiently accounted for it. This liquid was blood, or at least serum united with the colouring matter of the blood, which in a very short space of time had been exhaled in an enormous quantity on the internal surface of the serous membrane ; there were, moreover, flocculi and false membranes, which shewed that this kind of hemorrhage was connected with an inflammatory state of the peritoneum. This is one of the most acute cases of peritonitis, without the existence of intestinal perforation, which we have ever seen. Scarcely three days elapsed between the invasion of the abdominal pains and the death of the individual ; and still here, also, we find no appreciable lesion of any of the organs important to life, such as the heart, lungs, or nervous centres.

Case 6.—*Peritonitis consecutive on acute metritis in a woman recently delivered.*

A woman, thirty-one years of age, was delivered naturally, but with much difficulty and pain, of her first child, the beginning of December. Four days after she was seized, without any known cause, with violent fever and some pain in hypogastrium. The same evening she entered the Charité, and was very weak and much dejected. About three fingers' breadth above the pubis we found a globular tumour painful on pressure, which, in its form and position, resembled the body of the uterus. The hypogastric pain the patient stated was less than that which she felt in the groins. No discharge from the vagina ; pulse frequent and hard ; tongue natural ; skin hot and dry. The case was announced to be acute metritis, for which leeches and the ordinary treatment were prescribed. Between the third and seventh day general bleeding was employed ; leeches were twice applied ; the fever diminished ; the inguinal and hypogastric pain ceased, but the tumour still continued. She was sinking rapidly ; great alteration of the features. On the eighth day vomiting set in ; she vomited green bile, and her ptisan. The pain over the entire abdomen was aggravated by the slightest touch ; still the abdomen was not tense ; suppession of the alvine and urinary evacuations. About forty hours after these new symptoms she expired.

Post mortem. A turbid milky serum was effused in some quantity into the peritoneum, which was here and there covered with whitish membraniform spots, without any trace of true organisation ; there was observed considerable injection, the seat of which seemed to be the subperitoneal cellular tissue. The latter was partially filled in several points with reddish serum. More flocculi and a thicker liquid than that contained in the rest of the peritoneal cavity of the pelvis. The tumour observed during life still projected above the pubis, and found to be the uterus enlarged. The tissue of this organ was become very friable, and was very easily torn ; when an incision was made into its parietes, a large quantity of creamy pus gushed from every part of the organ, particularly from its fundus. The cavity of the uterus was very large and its surface red. Two remarkable lesions were found in the thoracic organs. 1st, A tuberculated state of the bronchial glands, which were very large. 2nd, At the apex of the left lung a small cavity, with cellulo-fibrous parietes, capable of admitting a cherry, and communicating by a species of anfractuous fistulæ with two other cavities of still smaller dimension, all containing a small quantity of reddish liquid ; the pulmonary tissue around these was black and hard ; when viewed externally it was puckered, and was separated from the first rib by a sort of half-cartilaginous membrane several lines thick, evident of old false membranes of the pleuræ.

This case is remarkable in more respects than one. First it presented a striking instance of acute metritis, coming on without any known cause, after a first confinement in a young woman. After active antiphlogistic treatment the symptoms improved ; and one would have supposed that the inflammation of the uterus was progressing towards resolution, if the size of the tumour formed by this organ had not remained the same. On the other hand the rapid sinking of the patient indicated the continuance of a serious lesion. What was very remarkable and deserving the attention of every practitioner was, that at the very time when the fever was becoming almost none, and the hypogastric and inguinal pain was disappearing, the uterus was becoming disorganised, its tissue was filling with pus, and towards the tenth day since the invasion of the metritis, this pus was already forming several abscesses. It is not uncommon to see the formation of pus in different organs with a marked remission of the worst symptoms : this, for instance, has been more than once observed in the brain. What attaches still further interest to the present case, is the rapidity with which the suppuration set in ; the disease was chronic in several of its symptoms, and acute in its progress.

The peritonitis may be considered as having its point of departure in the portion of the serous membrane in the vicinity of the uterus. The copious bloodletting employed, state of debility of the patient, the acute marasmus with which she was struck, did not prevent the development of this new inflammatory process, which appeared to extend from the tissue of the uterus by contiguity of tissue, to its investing membrane, and thence to the rest of the peritoneum. One may say, generalising this particular case, that the circumstance of one organ being inflamed is a reason for others becoming so ; so that in most acute, but principally in chronic diseases, it is extremely rare to find but one organ affected. However, in this same case, a remarkable exception to what has now been stated presents itself, an exception which, in the case of peritonitis, is almost constant; we mean the continuance of the healthy state of the gastro-intestinal mucous membrane, notwithstanding the very acute inflammation of the peritoneum.

The signs of peritonitis were manifest; one only was wanting, namely, tension of the abdomen; but the continuance of the soft state of the abdominal parietes is an ordinary case in women seized with peritonitis after delivery; the reason of it is evident. The alteration observed at the apex of the left lung I consider to indicate a cicatrisation of tuberculous cavities. This fact acquires considerable importance here, in consequence of the tubercles which existed in the bronchial glands; it is a proof in favour of the opinion of M. Louis, who thinks that every time any organ whatever contains tubercles the lung also contains some.

Case 7.—*Acute peritonitis coming on during a chronic enteritis—Effusion of reddish serum into the peritoneum, without any other trace of inflammation of this membrane.*

A stone-cutter, fifty-four years of age, who had been several times treated at the Charité for metallic colic, had been labouring under severe purging for the last four months. When he entered the hospital he was weak and very much emaciated, there were nine or ten stools every twenty-four hours. Tongue natural; loss of appetite; abdomen soft, and painful only at intervals, generally before going to stool. (Sydenham's white decoction; gum potion; starch lavement, with two drops of Rousseau's laudanum and yolk of egg.) The next day but four stools. For the three following days the same treatment was adopted. Only three stools per day. On the 24th some decoction of catechu was added. Only two stools up to the following morning; abdomen free from pain; no fever. The same medicine, and the same state of the patient, up to the 28th. Two stools per day without pain. M. Lerminier now substituted for the other medicines the decoction of simarouba. The patient continued this treatment, from the 1st to the 6th of March. But one stool in the twenty-four hours. Abdomen free from pain; still the patient recovered neither strength nor appetite. On the 6th everything changed; tongue red and dry. (Simarouba suspended; emollient ptisans.) On the 10th, fever gone; tongue moist and pale; purging returned. Simarouba again presented, On the 12th, purging stopped. On the 15th, simarouba suspended. Every thing seemed to promise a recovery; yet the countenance continued very pale. No return of appetite or of the strength; a little fever observable particularly towards the evening. On the 16th, a great change took place in the state of the patient: extreme anxiety; acute abdominal pains, which were increased by the least pressure; pulse very small and frequent; skin very hot. Peritonitis was now present beyond all doubt. (Twenty leeches to the abdomen.) Abdominal pains less the following day; tumefaction of the abdomen, which presents an obscure fluctuation, From the 11th to the 24th, the abdominal pains ceased to be felt; the fluctuation became more and more manifest; and considerable ascites soon appeared. The pulse was feeble, but not frequent; two liquid stools took place in the twenty-four hours. (Blister to the legs; simple emollients internally.) On the 25th, the abdominal pain reappeared; extreme prostration; all the symptoms of approaching death set in, which took place on the 26th.

Post mortem. An abundance of reddish serum in the peritoneum, without an admixture of other flocculi, or any trace of false membranes, or any appearance of any inflammatory process whatever in the serous membrane, or in the subjacent cellular tissue.

On the lower fourth of the small intestine a considerable number of ulcerations were observed, the bottoms of which were brownish, and consisted of cellular tissue, hard and thickened ; in several of them the bottom was on a level with the edges, and the tissue forming them appeared continuous with the mucous membrane. Was this commencing cicatrisation ? Between these ulcerations, and even on their edges, the mucous membrane was white and very consistent.

The acute peritonitis in this case cannot be called in question, from the symptoms which indicated it during life ; from the mere inspection of the dead body it might have been overlooked. For we find no other change in the peritoneum except an effusion of serum combined with a certain quantity of the colouring matter of the blood. This is what is observed in certain cases of simple ascites consecutive on a mechanical obstacle, and supervening without pain. Here then is a case wherein the nature of the symptoms throws more light on the real nature of the disease than is done by pathological anatomy ; compare this case with those where, though no pain existed during life, pus, false membranes, etc., are found in the peritoneum.

Another disease was present in this individual at the time of his admission, namely, chronic inflammation of the intestinal mucous membrane ; we should at least consider the diarrhœa under which this patient laboured for so long a time as being the result of this inflammation. We first gave simple emollients, narcotics, and then astringent tonics. During the administration of these medicines we observe the purging disappear no doubt, but only for a time. The stomach became irritated, as appeared from the redness of the tongue and the fever. This gastritis, which was probably occasioned by the simarouba, was soon removed by suspending the use of this medicine. Then the purging reappeared ; the astringent bark was again resumed, and it stopped it, nor did it afterwards return.

From the influence exercised at first by the tonic treatment on the cessation of the diarrhœa, one would naturally be disposed to think that this diarrhœa was not here connected with an intestinal inflammation, but that it depended rather on a state of atony of the mucous membrane, *that it was a species of passive flux*. The post-mortem examination proved that this was not the case. Over a certain extent of the intestine ulcerations were found to exist, which their appearance showed to be of long standing ; but the absence of colour in the mucous membrane between them, indicates the absence of any previous reaction on the part of the ulcerations. This is the strict expression of the facts. If we now wish to deduce any consequence from them, we shall ask whether such a case does not seem to afford a proof that there are certain chronic inflammations which may be beneficially combated by other means than those that are simple antiphlogistics. We have already discussed this point of doctrine. Observe further, that it cannot be said in this case that the cessation of the purging was the result of the increase of the irritation of the intestinal mucous membrane : for if it had been so, we should have seen the abdominal pain become aggravated and fever set in ; in a word, we should have observed that group of symptoms which manifest themselves when a chronic inflammation passes for a time into the acute state. But it was not so. We may ask, however, whether the irritation in the stomach, after the employment of the astringents, did not perform a part in the temporary disappearance of the diarrhœa. Neither shall we forget that even after the purging stopped, the continuance of the anorexia and of the general debility, as also the febrile movement, indicated an organic lesion which survived the diarrhœa. In this case we found an additional instance of a diarrhœa in which the cause of the intestinal flux resided solely in the small intestine, the large intestine having been found perfectly healthy. We may remark that the total anorexia which this patient experienced for a long time back could not be accounted for by any appreciable alteration of the stomach itself, which appeared to have suffered merely temporary irritation, at the time when the tongue became red and the fever increased.

CHAPTER II.

ACUTE PERITONITIS CURED.

CASE 8.—Acute peritonitis, the first symptoms of which showed themselves during the paroxysm of an intermittent of the tertian type. He had had already five paroxysms, which presented nothing unusual, and during the intermissions he was in good health, when at the commencement of the cold stage of the sixth paroxysm he felt acute pains in the abdomen, which were increased by pressure and by motion. These pains continued during the cold and hot stage, and disappeared according as the sweating stage set in. Till the return of the next paroxysm these pains did not reappear ; pressure on the abdomen did not excite them, but the patient was pale and more cast down than usual. The pain reappeared with the cold stage of the seventh paroxysm, but disappeared with the sweat as at first. Till then the intermittent fever had been left to itself. After the seventh paroxysm we began to give the sulphate of quinine in ten-grain doses. At the usual time the shivering reappeared with the abdominal pain ; there were also two attacks of bilious vomiting. After having lasted only an hour,it ceased ; but was not succeeded either by a hot stage similar to that of the preceding paroxysms, nor by sweat ; other symptoms much more alarming appeared ; the abdominal pain continued to be very acute; the abdomen become tense ; bilious vomiting came on every half hour, small at first, but very distressing to the patient. The face became shrivelled and pale, and the pulse very frequent. On the next morning there was no doubt of the patient been attacked with peritonitis. Leeches were ordered, and as there was constipation castor oil also was given in small and repeated doses. The leech bites continued to bleed all the day ; he had five or six bilious stools. The next day the abdominal pains were felt only on pressing or moving, but then they were very acute; he could lie only on his back. Some nausea still, but no vomiting. Abdomen full and tense. Leeches applied every day for the three days following, and a blister to each leg. He was now in the sixth day of his peritonitis, and the pain had been decreasing every day, as also the frequency of the pulse. The skin, which was till now dry, was covered with a profuse sweat. On the 10th day he was convalescent.

We may here observe the evident success of the treatment employed. For four days an almost constant bleeding was kept up on the abdominal parietes, and before this a general bleeding had been adopted. The castor oil seemed to be very serviceable, and lastly, the blisters applied to the lower extremities, at a time when the inflammatory symptoms were much less acute, effected a useful revulsion, and accelerated, no doubt, the complete resolution of the peritonitis. Irritants applied to the skin as revulsives have certainly been very much abused ; when employed too soon, or with persons of very irritable habit, or with very active sympathies, they have but too often aggravated the inflammation which they were intended to subdue. Instances of their danger occur in several parts of this work. But in many cases their great advantage cannot be called in question. It will be seen that in general blisters, applied to the lower extremities, at a distance from the seat of the disease, have appeared to succeed best.

Thus in cases of pleuritis, pneumonia, and pericarditis, it is to different parts of the lower extremities, that we should apply revulsives, though there may be cases in which their application to the chest itself be more useful. In cases of acute cerebral affection, the application of a revulsive to the nucha has scarcely ever appeared to be attended with advantage ; with respect to blisters to the cranium, they have always seemed to have an injurious influence. On one occasion in a child, who presented several symptoms of arachnitis, I observed a perceptible improvement on the day following the application of the blister. This was attributed to the action of the revulsive, when, on raising it, we found that the skin of the cranium had been but slightly reddened, but no blister had been raised. I once saw a large blister applied over the abdominal parietes of a person labouring under acute peritonitis, and a very marked exasperation of the symptoms followed. With respect to inflammations of the gastro-intestinal mucous membrane, the application of blisters over the abdomen in their acute state aggravates them in general; yet there are some exceptions to this; thus we have several times seen very profuse alvine evacuations, which came on suddenly, were accompanied with very little fever, and soon exhausted the patient very much, arrested by the application of a large blister to the abdomen. This same mode of treatment also is sometimes very efficacious in soon arresting chronic diarrhœa.

If this case is interesting with respect to the favourable termination of the disease, it is no less deserving of attention with respect to the onset of the progress of the peritonitis. Its first symptoms were intermittent, like those of the paroxysm of the tertian ague, in the middle of which they appeared. No doubt, during the cold stage, severe sanguineous congestion took place in the peritoneum, and disappeared as soon as the sweat announced the recal of the fluids from the interior to the exterior. Was there this first time simple congestion in the peritoneum, or real inflammation of this membrane? the decision of this point appears to me of little importance, as I conceive these two states always tend to become confounded by imperceptible shades, as one may satisfy oneself by observing the different degrees of ophthalmia. The same symptoms of peritonitis uniformly reappeared in the succeeding paroxysm; they were still more marked than the first time, since they were accompanied by vomiting. It is probable that if the sulphate of quinine had been able to prevent the return of the following paroxysms, the peritonitis would have been removed with them; but such was not the case, and probably the quinquina was ineffectual for this very reason, that there was a predisposition in the system to a more serious disease: a new paroxysm reappeared with symptoms of peritonitis; here, however (and this was different from what we have observed at other times), the irritation of the peritoneum, whether it was more intense, or of a different nature, did not disappear; sweating did not terminate the paroxysm of fever, and it did not reappear till eight days afterwards; again coinciding with the favourable termination of the peritonitis. Then it announced its complete resolution, as, in the two last well-defined paroxysms of intermittent fever, it had marked the termination of the abdominal pains. Here then is a striking instance of sanguineous congestion at first intermittent, like the febrile paroxysms with which it coincided, and replacing these paroxysms as soon as ever it became continued. Perhaps at the time of the third paroxysm, of which the first stage only was observed, if an attempt had been made to produce a powerful congestion towards the skin, either by a hot bath, by stimulant fumigations, or by various revulsives, we might have established the movement from the centre to the surface, and by exciting sweat, we might have cut short the peritonitis by producing artificially that which had been done by nature in the two preceding paroxysms. The quinquina then might have been administered anew for the purpose of preventing the return of the following paroxysms. In a preceding part of this work I have cited a case of pleuritis, the symptoms of which at first appeared only every evening. These facts seem to me to prove the possibility of intermittent inflammations; the fact is undeniable with respect to several cutaneous inflammations. There is at this moment in the hospital Saint Louis, under the care of Dr. Biett, an individual who, for the last two years, has had his skin covered every evening with an eruption, of which there is not a trace to be seen in the morning. This periodical affection has not yielded to quinquina. Two classes of these intermittent inflammations must be distinguished; some of them occur as mere complications during a paroxysm of fever; they are the result of a local congestion more intense than ordinary, and produce symptoms more or less serious, which disappear with the paroxysm; thence result those diseases called *pernicious fevers.* The disease now under consideration, Torti would have called *peritoneal intermittent fever.* Other inflammations also occur in an intermittent form, but isolated and separate, without being preceded or accompanied by shivering, or followed by sweating; in a word, without that group of symptoms which constitute a paroxysm of fever.

SECTION II.

CHRONIC PERITONITIS.

It is only by collecting and carefully perusing cases that one can make himself acquainted with the infinitely varying forms which chronic inflammation of the peritoneum may assume. There are cases, no doubt, where nearly the same symptoms are observed as those which mark the existence of acute peritonitis; but at other times these symptoms disappear: thus, there are cases of chronic peritonitis which are painful only at their onset; there are others which never occasion the slightest pain, resembling in this respect certain cases of pleuritis, already alluded to in a preceding part of this work, which commence, become developed, and terminate in the formation of vast purulent collections, without the patient's having ever felt any pain. There are other cases of chronic peritonitis in which the abdomen retains its softness; and if there be at the same time no pain, the inflammation of the peritoneum must be almost necessarily overlooked. In certain cases the onset of the disease has been peritonitis; but at a subsequent period nothing is found but mere ascites. Owing to the varying disposition of false membranes, the abdominal parietes may present strange anomalies in their form; the fever may be continued, may exist only at intervals, or may not appear at all; chronic peritonitis again is found very much modified in its progress and in its symptoms by the different diseases which may complicate it, and which have their seat either in the abdomen, such as different affections of the digestive tube or liver, or outside this cavity, as diseases of the lungs or their appendages. In the peritoneum, affected with chronic inflammation, different accidental productions are frequently developed, and particularly tubercles; in this organ, better than in any other, can we trace the formation of those bodies, ascend to their etiology, and discover their nature. The different forms of chronic peritonitis being determined, it still remains to be ascertained what treatment is most applicable to them, and how this treatment should be modified according to circumstances.

CHAPTER I.

CASES OF CHRONIC PERITONITIS ACUTE AT THEIR ONSET.

Case 9*.—*Very acute abdominal pain and frequent vomiting during the first ten days; afterwards, a disappearance of every sign of acute inflammation of the peritoneum—Collection of pus in the cavity of this membrane—Chronic entero-colitis.*

A woman, forty-four years of age, felt, on the 21st of March, an acute pain, which, taking its origin at the hypogastrium, extended into the inguinal region. She then had nausea and vomiting. The application of leeches relieved her. Pressure, however, still excited pain in the abdomen, which still was tense; no return of strength. She remained in this state till the 16th of May, when her state was as follows:—flesh flabby and pale; marasmus; great debility; features drawn, and expressive of pain; abdomen enlarged, but soft; its parietes were so flaccid that fluctuation could not be perceived; painful only when pressure was made on the hypogastrium and flanks; tongue pale, and covered with a dirty yellowish coat; her ptisans excited nausea and vomiting; great thirst; no appetite; profuse diarrhœa for the last six weeks; pulse frequent and weak; skin hot and dry. All means for stopping the diarrhœa failed, and she died June the 1st.

---

* This case of chronic peritonitis, and the following, were acute at their commencement.

Post mortem. The peritoneum was filled with a brownish, sanious liquid, which separated the intestines from the abdominal parietes. Several of the intestinal convolutions were found to have formed adhesions. Numerous ulcerations were found on the termination of the small intestine and cæcum.

When this patient entered the Charité the symptoms of enteritis were much more marked than those of peritonitis. The abdomen did not present that tension and resistance usually observed when the peritoneum is inflamed. On the contrary, it presented that flaccid appearance met with in persons who have passed from a state of considerable embonpoint to that of great emaciation. Still the previous history, and the pain still occasioned by pressure, induced M. Lerminier to think that the inflammation of the serous membrane, by which the disease seemed to have commenced, was continued into the chronic state. The correctness of this diagnosis was confirmed by the autopsy. It was so much the more difficult, as the wasting of the patient, and the hectic fever which consumed her, were sufficiently accounted for by the existence of the chronic diarrhœa. It was one of those varieties of peritonitis which approach so very closely to ascites in their symptoms. The brownish colour of the liquid which filled the serous membrane is also deserving of our attention: it bore the greatest resemblance to the liquid which often fills the ileum. It was even our opinion, at first, that there had been perforation of this intestine, either at the last moments of life, or even at the time when the abdomen was opened, in consequence of handling the ulcerated portions of the intestine. Yet no solution of continuity was observed. A very active antiphlogistic treatment may sometimes arrest the progress of an acute peritonitis, and rescue the patient from death, but then the inflammation too often passes into the chronic state; and if the patient no longer complains of pain, if the abdomen is not very tense, the practitioner may at first fancy that a complete cure has taken place, but he will be cruelly undeceived when he finds that the patient's strength does not return, that some fever still continues, and that convalescence is prolonged to an indefinite period.

Case 10.—*Abdominal pains at the onset; afterwards abdomen completely indolent—Tension of the abdominal parietes—Soldering (soudure) of the intestinal convolutions appreciable by manual examination through the abdominal parietes—Purulent effusions in separate compartments in the peritoneum—Rectitis.*

A woman, twenty years of age, who had been delivered of her first child a year before entering the hospital, was in very good health, when one day, on leaving her bed, she felt an acute pain in the right flank, which was relieved, but not removed, by the application of leeches. For the following twelve days this pain was rather obscure, but at the end of this time the abdomen was tumefied and painful. She entered the Charité March 21st, when thirty leeches were immediately applied, which removed the pain. The next morning the abdomen continued tumefied, but free from pain, except in the hypogastric region, where pressure caused pain. Vomiting for the last three days ; tongue natural ; constipation ; pulse very frequent and contracted ; skin not hot. The usual remedies were resorted to, such as leeches, demulcent lavements, castor-oil, &c. From the 23d to 28th, abdomen free from pain, but it became harder, and very tense and knobby (bosselé). On examining with the hand, we thought we felt the intestines soldered together, and forming but a single mass. Pulse frequent and weak ; a little diarrhœa. From the 1st to the 22d of April, the peritoneal symptoms remained the same, but severe diarrhœa set in. The patient sunk imperceptibly, and towards the end of April the respiration became embarrassed, and she died.

Post mortem. Intestines united by numerous small cellular bands, the latter circumscribing purulent effusions, so as to form, as it were, separate abscesses. The partitions of these abscesses were of a dark red colour ; the cavity of the pelvis, the right iliac fossa, and the left flank, were filled with greenish pus. To the left of the uterus a purulent pouch was found, large enough to hold an orange. The gastric mucous membrane was soft, and streaked with reddish lines in its splenic portion. The mucous membrane of the rectum presented several red patches.

Three periods presented themselves in this disease with respect to the symptoms of peritonitis. At first we observed some pain, which was not accompanied by any morbid phenomenon, and which did not appear to indicate any thing serious ; it was just such a pain, for instance, as oftentimes precedes the appearance of the menses in women. This symptom, however, light as it appeared, was, as it were, the precursor of the most serious phenomena. This pain, which appeared not connected with any thing particular, which was not so severe as to prevent her from attending to her usual occupation, became changed, after a certain time, into a pain which assumed all the characters of peritoneal pains, and it was only then the other symptoms of acute peritonitis became developed. These symptoms soon disappeared after a large bleeding, and then commenced the third period, when the disease of the peritoneum became chronic. It alone was no doubt sufficient to carry the patient to the grave ; but her death was further accelerated by the profuse diarrhœa which set in. The organic change which kept up this was confined to the rectum. The lesions found in the peritoneum attest the chronic form of the inflammation of this membrane. We may remark those numerous bands, formed of a dense cellular tissue, which was already organised, though the disease was not yet of a very long standing. Those numerous abscesses are also deserving our notice, the parietes of which consisted of cellular bands. The numerous septa which confined the pus in so many distinct cells rendered it quite impossible to perceive the fluctuation.

CHAPTER II.

CASES OF PERITONITIS CHRONIC FROM THEIR ONSET.

CASE 11.—*Ascites coming on without pain—Œdema of the limbs—Turbid flocculent serum in the peritoneum—Scirrhus of the stomach and colon.*

A man, sixty years of age, began to feel some disturbance in the functions of digestion two years before entering the Charité ; he had never felt any pain in the epigastrium, and about seven months before the period we saw him, he began to vomit. When we saw him, he was in a state of marasmus ; face very pale , most of the food which he took was vomited a few hours after being taken. Complete anorexia; much acrid eructation; tongue covered with a thick yellowish coat; obstinate constipation. Leeches were applied to the epigastrium, with some benefit. Some days after a *moxa* was placed on it. The gastric symptoms at first improved. The vomiting was diminished, but the abdomen soon began to swell, and peritoneal effusion became manifest. About a month after the ascites, the lower extremities became œdematous; no fever. He became weaker every day, passed but little urine, never perspired; tongue, which for a long time had a healthy appearance, became red and dry; pulse frequent and very small; an adynamic state set in, and he died. The abdomen had never been painful.

Post mortem. Turbid serum in the peritoneum, containing albuminous flocculi, which were found in great quantity towards the left hypochondrium. Gastric mucous membrane injected towards the great cul-de-sac; two fingers' breadth on this side of the pylorus this membrane no longer existed. The ulcer resulting from this was formed of thickened and indurated cellular tissue (scirrhus.) The muscular coat of this part had also disappeared. The pylorus was very much contracted, and could not admit the end of the little finger. About three inches in length and one in breadth of the mucous membrane of the transverse colon was puckered. Beneath it the cellular tissue presented a scirrhous appearance, like that of the pylorus.

The lesions found in the dead body leave no doubt that peritonitis existed in this case. Still this inflammation was not announced by any pain either at its onset or in its course: everything inclined one to think that the tumefaction of the abdomen was the result of simple, or what is called essential ascites. This peritonitis thus free from pain supervened, as a complication towards the latter period of the affection of the stomach; this latter, which was essentially chronic, repassed into the acute state a few days before the patient's death. With this acute state, the intense redness of the gastric mucous membrane was connected, and also the sudden change of the appearance of the tongue, which having been natural till then, became red and dry. At the same time that this symptom of acute gastritis became developed, the prostration made rapid progress; and the adynamic state, in which the patient died, appeared in this case to be the result of the acute inflammation of the stomach, supervening on a chronic disease of this viscus.

SECTION III.

PARTIAL PERITONITIS.

I HAVE elsewhere spoken of partial inflammation of the pleura, and we have seen how much the symptoms of this form of inflammation of the thoracic serous membrane differ in certain respects from those of general pleuritis, and how important it is to obtain a correct knowledge of them. The same reflections apply to partial peritonitis. Though common enough, particularly in the chronic state, they have hitherto been but very superficially studied; and yet what can be more deserving of attention than the different groups of symptoms, whether local or general, to which they give rise? what more delicate than their diagnosis in many instances? There are cases of peritonitis, which, from their deep seat, are announced only by pain, acute or dull, continued or intermittent, without the presence of any tumour appreciable during life, without any change in the form of the abdominal parietes, or diminution of their natural softness. Other cases of partial peritonitis compress, displace, and irritate the organs in the vicinity of the portion of inflamed peritoneum, and the most prominent morbid phenomenon to which they give rise, is a greater or less disturbance in the functions of these organs, so that one supposes the latter to be affected, whilst their investing membrane alone is diseased. At other times, in consequence of their more superficial seat, circumscribed peritoneal inflammations produce tumours appreciable to the sight and touch. These tumours, which vary infinitely in their situation, form, size, and relations, are often considered as appertaining to the different organs which they happen to be nearest. The mistake is particularly liable to be committed when the functions of these organs are at the same time more or less disturbed. With respect to the general symptoms, they are not at all constant. Thus the fever may be none, intermittent or continued ; nutrition may remain intact, or become deteriorated, and thus marasmus supervene. In many of these cases of partial perironitis, the local symptoms are the least marked ; there is neither pain nor tumour, nor marked disturbance in the functions of the different abdominal viscera. But the individuals waste away, they feel an habitual illness and indisposition, for which they cannot account ; paroxysms of fever supervene ; as in every sick person, the nervous system becomes sensitive ; we observe in the functions of this system several anomalies, which we cannot account for. It is then that the primary cause of all these symptoms is referred to this same nervous system, whilst in reality it is affected only sympathetically, and altogether secondarily. How many such diseases, a long time considered as mere neuroses, then become serious organic diseases ! They were so from the commencement ; but, on account of the absence of the local symptoms, their nature must unavoidably be mistaken. Such is the case with several hypochondriacs. Their sufferings are considered imaginary, and still it is true that, in the greater part of these, the strange phenomena observed, and which are very properly referred to disturbance of the nervous functions, have their point of departure in a more or less latent affection of some organ. That minute attention which they pay to their health, that extraordinary tendency to exaggerate every the least suffering, is it not a mode of giving expression, as one may say, to the habitual indisposition which they experience, which is but too real, and which we are always disposed to deny, because we cannot discover the cause ? The partial inflammations may attack the following structures : 1st, The great epiploon ; 2nd, The peritoneum of the hypochondria and flanks ; 3rd, That of the cavity of the pelvis.

CHAPTER I.

EPIPLOITE.

Case 12.—*Acute epiploitis causing death in an individual labouring under a chronic affection of the stomach and liver.*

A man, sixty-four years old, entered the Charité in the middle of January. He presented the symptoms of chronic gastritis, and moreover the liver passed several fingers' breadth below the cartilaginous edge of the ribs of the right side, and formed a tumour in the hypochondrium painful to the touch. He remained in this way till February 17, constantly becoming weaker; on this day he had some vomiting and an acute pain over the anterior wall of the abdomen. On the 18th, pain continued; the recti muscles were very tense and contracted. He died on the 22nd.

Post mortem. The abdominal parietes being raised, we found extended in front of the intestines a reddish body five or six lines in thickness, readily torn, and then allowing a sero-sanguinolent fluid to ooze from it; it was attached superiorly to the transverse colon, terminating inferiorly in a free edge, not far from the pubis, its lateral edges being equally free. This body was evidently the great epiploon reddened and swollen by acute inflammation, which had been announced by the ordinary symptoms of every acute inflammation. Cancerous masses were found in the liver, and scirrhous induration of the walls of the stomach in its pyloric portion. The mucous membrane also was thickened and of a slate colour.

In another case I saw a considerable tumour developed in twenty-four hours around the umbilicus in a person affected, as in this case, with disease of the liver; he also died rapidly. On opening the body, we found that the tumour detected during life was formed by the epiploon, considerably swollen, and discharging, when torn, a bloody fluid. The numerous alterations of which the great epiploon may become the seat, may have their origin in an acute inflammation like the preceding; but in several cases it is never in an acute form, but gradually and imperceptibly, that these changes are produced. Thus we may find it either merely tumefied and gorged with liquid, or really hypertrophied, or indurated and scirrhous, or tranformed into fibrous tissue. In its interior, and with one or other of the preceding alterations, either pus may be secreted, and scattered through it, or collected into an abscess or tuberculous matter. The adipose vesicles, which it contains in great numbers, may present themselves under the form of small hard granulations, which seem to be fat modified in some way, as we may satisfy ourselves by examining the successive grades through which it passes, in order to take on the appearance of these granulations, which are again one of those lesions very vaguely designated by the name of *cancer*.

According as it is developed, undergoing one or more of the alterations now mentioned, the great epiploon may be modified in its form, so as to constitute tumours varying in every way with respect to their size and appearance. These tumours may be often readily taken for the stomach, the parietes of which are thickened and indurated; this happens principally when the great epiploon increases in size, and forms a tumour only in the part which extends from the great curvature of the stomach to the colon. It then often represents a sort of puffy tumour (bourrelet), of more or less thickness, which throws back the arch of the colon, and borders the stomach. When felt through the abdominal parietes, this puffy tumour, with a smooth or uneven surface, must be taken for the stomach; according to the degrees of development of the gastro-colic epiploon, manual examination may induce us to think that the stomach itself forms a tumour, either through the entire of its body, or in the great cul-de-sac, or in its pyloric portion. In such cases I have seen the mistake become so much the more inevitable, as with this tumour there co-existed symptoms of an organic affection of the stomach. At other times, on the contrary, digestion continues to go on, and then these tumours of the gastro-colic epiploon may continue for a very long time, without perceptibly disturbing the system. At other times again, without there being any disturbance of the digestion, the morbid state of the epiploon reacts sympathetically on other organs, modifies the circulation, and by itself produces the hectic fever and death. All these differences depend, no doubt, 1st, on the relations of the tumour to the stomach; 2ndly, on its anatomical composition; 3rdly, on the individual predisposition of the patient, whence are produced functional disturbances of the most varying description under the influence of one and the same lesion. If the great epiploon be tumefied principally on its left portion, the tumour which it forms may then resemble the enlarged spleen in its situation, its direction, and its relations.

CHAPTER II.

PARTIAL INFLAMMATION OF THE PERITONEUM, FLANKS, AND HYPOCHONDRIA.

Cellular bands uniting the diaphragm and convex surface of the liver, are often found on the dead body. They are also occasionally found between the spleen and the part of the abdominal parietes with which its external surface is connected. At the same time there is frequently no trace of inflammation on the rest of the peritoneum. In most of the cases where the autopsy discovers this partial peritonitis, which we might call perihepatic or perisplenic, we know not whether during life they produced any particular symptoms. On this point I have observed the two following facts:—In two cases where close adhesions united the liver and diaphragm, the previous history of the patients informed us that several years before we saw them they had had jaundice. Liver in its normal state. In a third case, jaundice was developed in a patient during his stay in the hospital, as a complication of another affection (cerebral congestion with fever.) Death took place on the ninth day after the appearance of the jaundice. The patient had never complained of pain in the site of the liver. At the autopsy we found interposed between the liver and the diaphragm rudiments of pseudo-membranes, soft, whitish, and unorganised, which were evidently of recent formation. The duodenum was not altered. As traces of the primary disease, we found numerous ulcerations at the end of the small intestine and in the large intestine. If we have elsewhere admitted that simple diaphragmatic pleuritis may occasion jaundice by irritating the liver sympathetically; *à fortiori* it must be admitted, that jaundice may be the result of inflammation of the portion of the peritoneum surrounding the liver, just as inflammation of the pleura occasions cough by irritating sympathetically the pulmonary parenchyma and the bronchi.

Another patient complained of frequent pains of long standing in the right hypochondrium; he never had had jaundice. After death we found the capsule of Glisson very much thickened, and cellular bands extending, on the one hand, between the convex surface of the liver, and the diaphragm; and on the other hand, between the liver and arch of the colon. An individual laboured under a double cancer of the liver and stomach of which he died. Some cellular adhesions connected the liver to the diaphragm, and to the anterior abdominal parietes, behind which it was felt during life. There was this remarkable circumstance in this person, that he suffered principally in the hepatic region when he walked down stairs; is it because the cellular bands which connected the liver to the diaphragm underwent a painful dragging? Now it might be asked, why, the same adhesions existing around the liver, in one case they are not announced by any symptom, in another case they are painful, and in a third they produce jaundice? But we can only answer this by citing analogous cases, and showing that there is no constancy in many of the symptoms which mark acute or chronic inflammation of the other serous membranes; thus pleuritis may exist with or without pain, with or without cough; thus pericarditis, whose invasion is oftentimes announced by so characteristic a pain, may be unaccompanied with pain at its onset, and remain so whilst it lasts; it may occasion the most varied modifications in the heart's contractions, or not at all derange them; thus meningitis, its seat being supposed the same as also its severity, sometimes produces delirium, and sometimes leaves the intelligence intact; it may or may not be accompanied with headach, etc. In the vicinity of the liver, spleen, and kidneys, tumours are often developed, which result from the imprisonment of a certain quantity of liquids of various kinds by false membranes, which form the parietes of the pouch, and which are the result of partial inflammation of the abdominal serous membrane. These false membranes have in general nothing regular in their mutual arrangement; they usually produce within the pouch, whose parietes they form, bands, complete or incomplete septa which divide it into several compartments. At other times they are raised, if I may so say, to a higher grade of organisation: the inner surface of the parietes of the pouch then presents a regular appearance, smooth or areolated, as it is found in natural cavities; this pseudo-membrane, which was at first but an amorphous product, but still organisable, becomes changed into a cellulo-vascular membranous tissue, which itself sometimes puts on the appearance of a serous or mucous membrane. Then the most varied secretions may take place in it; and thus we may conceive how within those encysted tumours, such different liquids are found, serum, pus, and its numerous varieties; blood, other products which have not yet received any especial name, resembling animal jelly, honey, soot, etc. Hydatids also have been met therein.

CHAPTER III.

PARTIAL INFLAMMATION OF THE PERITONEUM OF THE CAVITY OF THE PELVIS.

This kind of partial peritonitis is remarkable, both by reason of the frequent obscurity of its diagnosis, and in consequence of the symptoms to which it gives rise. The cases belonging to it I shall range in two classes: in the one those cases shall be found, in which the inflammation of the pelvic peritoneum during life produced no tumour appreciable to the touch; the second class shall include the other cases where there was a tumour which could be detected through the abdominal parietes. This tumour being ascertained, the task of the observer is not finished; he must determine its nature, he must ascertain whether it belongs simply to the peritoneum, or to one of the pelvic organs, a perfection of diagnosis which it is not always possible to attain. There is a certain number of chronic inflammations of the pelvic peritoneum, which are only announced by the pain and wasting of the patient. It is evident that neither of these signs can serve to discover the nature of the affection which causes them. The pain is seldom very acute: in some it is continued; in others it returns only at intervals, and its return seems to be connected with some temporary exasperations of the peritonitis. In some cases, where there was no other local symptom but this pain, and where at the same time the general nutrition was not very much altered, it has been improperly considered as the product of a neurosis. I have had an opportunity of seeing a case of this kind. The subject was a young woman, who, after a first confinement, continued to suffer a pain, which had its seat in the hypogastrium behind the ossa pubis, and which appeared only in an intermittent form, like a neuralgia. When it reappeared, it was confined to the place already mentioned, and was but slight; but at times it became lancinating, and extended as it were by irradiation towards the neck of the uterus, superiorly towards the parietes of the abdomen, and posteriorly in the lumbar region, where she said that she felt pain like those which are felt at a certain period of child-birth. Such was the account which she gave us when she entered the Charité. Did not this affection now described resemble a neuralgia? But when she came under our observation, it was no longer so simple an affection. For the last month the pain had become continued; it was, however, less severe than when it existed only at intervals. Pressure on the hypogastrium was painful; the rest of the abdomen was soft and free from pain. There was perceptible emaciation, slight continued fever, and frequent sweats. We thought that there existed a chronic affection of one of the ovaries, or of one of the portions of the peritoneum surrounding them. (Leeches; emollient and narcotic fomentations over the hypogastrium.) This state continued for the next fifteen days; then profuse diarrhœa set in. The entire abdomen became tense and painful; she sunk rapidly and died. The autopsy detected in the peritoneum traces of recent acute inflammation, which the tension and general pains of the abdomen had announced for some days before death, (morbid serum with a mixture of amorphous fibrinous flocculi). The principal part of the internal surface of the large intestine, as well as that of the end of the small intestine, were very much injected, a lesion which was in accordance with the diarrhœa, which supervened towards the termination of life. These changes sufficiently accounted for the new symptoms which, added to the primary disease, accelerated the fatal term; but what was the cause of the old hypogastric pain? We found it to reside in a tumour the size of a small orange, deeply seated in the cavity of the pelvis; it was so posited there, that its right half lay between the body of the uterus and the rectum; whilst its left half, concealed anteriorly by the broad ligament, passed laterally beyond these two organs. This tumour contained a cavity separated into several incomplete apartments, in each of which a purulent liquid was found. Its parietes were formed of false membranes, lying one upon the other, evidently formed within the peritoneum. Thus this pain, which had for a long time assumed the character of a neuralgia, and only at a later period appeared to be connected with a chronic inflammation, was referrible to an inflammation confined to a small portion of the pelvic peritoneum which set in imperceptibly after her confinement. This inflammation, circumscribed as it was, became, however, after a certain time, a sufficient cause of fever and gradual wasting. In another woman I observed the same species of pain, accompanied with the same series of symptoms, and which also came on after a first confinement. However, after she had been suffering for eight months, all the symptoms disappeared, and she recovered perfect health.

Tumours similar to that now described may be situate or developed so as to compress the organs which they touch, to impede for instance the course of the fæces or urine. I have seen a case where, as a cause of a constipation of very long standing with progressive wasting, there was found in the cavity of the pelvis a large pouch full of pus, developed in the peritoneum with hard parietes, and as it were fibrous; it occupied the place of the rectum, which, being flattened on it like a riband, deviated considerably to the right, and was no longer connected with the sacrum. The parietes of the intestine were not altered; but it is hard to think that if the individual had lived for a longer period, the rectum would not have undergone some lesion of texture, compressed and irritated as it was by the pressure of the tumour which had displaced it. It might then have happened that by means of a fistula set up between the cavity of the tumour and that of the rectum, the pus would have been discharged by the anus, and a cure would have been effected. One would have thought during life that there was scirrhous hardening of the parietes of the rectum.

I have seen another case in which the cavity of the bladder was almost entirely effaced by the pressure of a tumour, in which was a cavity full of pus and of debris of hydatids. Being developed between the bladder and rectum, it had pushed the posterior wall of the former before it so much, that this wall almost touched the orifice of the urethra. The two ureters being distended by a great quantity of urine, had nearly acquired the size of a small intestine.

These different species of partial peritonitis exist less frequently alone than as a complication of certain affections of organs contained in the pelvis, and particularly of the uterus and ovaries. Thus, in some cases of chronic metritis, we find around the uterus one or more abscesses, which are evidently seated in the peritoneum.

Partial inflammations of the pelvic peritoneum, which have occasioned purulent depositions, circumscribed by false membranes more or less organised, have in general a fatal termination. Death may follow the constantly-increasing wasting of the patient; a striking proof of the fatal influence exercised over nutrition and life by a chronic inflammation of small extent, and which is not seated in any important organ. *A priori*, one would not suppose that anything serious could result from the collection of a small quantity of pus, in the midst of false membranes partially secreted by the peritoneum, the rest of this membrane remaining intact, and no other organ being affected. But if this partial inflammation is sufficient to disturb the circulation, to alter nutrition, to deprive the individual of his physical and moral energy, it seldom happens that it proves fatal by itself. Death generally supervenes, when, after the exhausted state into which the patient has already fallen, a new inflammation sets in: sometimes it is the peritonitis, which, from having remained partial for a long time, suddenly becomes general; sometimes different organs come to be affected, and particularly the lungs or digestive tube; for the peculiar facility with which these two organs, and principally the latter, come to be attacked with inflammation, in the course or towards the end of every chronic disease, is a very remarkable circumstance. It is much more frequently by these complications, than by the chronic disease itself, that the patient is carried off.

The pus collected in any part of the cavity of the pelvis sometimes makes its exit externally, and then either a cure is effected, or the suppuration still continuing, and the inflammation not ceasing, the disease terminates fatally. A woman had, in the right side of the hypogastric region, a large hard uneven tumour, somewhat painful. During the three first months of her stay in the hospital this tumour remained stationary. After this she passed, for the first time by stool, a great quantity of purulent matter. On the following days she passed more; then the purulent discharge ceased, but afterwards it re-appeared several times. From the first day that this discharge of pus took place the size of the tumour diminished; it then remained stationary again. The patient found herself better, and left the hospital.

It is probable that the purulent stools which this woman had were connected with the hypogastric tumour, and that it was the matter contained in this that made its escape through the rectum; for, when pus is secreted by the mucous membrane of the large intestine, it never makes its exit by the anus in such large quantity; and farther, it must not be forgotten that this discharge of pus coincided with a sudden diminution of the size of the tumour.

Are these cases where the pus collected in some part of the pelvic peritoneum may be reabsorbed, pass into the veins, then be eliminated from the mass of blood, either gradually and imperceptibly, or so as to form purulent depositions within the substance of different organs. On this point we shall submit to the reader a curious fact, in whatever manner he may please to interpret it.

A woman died in the Charité a little time after her accouchement. Her labour had been extremely difficult. During her stay in the hospital she presented two different periods. The first was characterised by dull pains in the hypogastrium, continued fever, with profuse sweats every night; rapid wasting away. The second period was marked by a state of prostration, which did not set in gradually, by a sudden alteration in the features, some delirium, and profuse diarrhœa. This second period was short, and was soon followed by death. At the autopsy the following lesions were found:—first, a state of engorgement, and softening of the tissue of the uterus; secondly, around this organ several purulent collections inclosed in compartments, the parietes of which consisted of false membranes intercrossing in different directions ; thirdly, a little serum, which was slightly turbid, effused into the rest of the peritoneum ; fourthly, considerable injection of the end of the ileum, cæcum, and commencement of the colon ; fifthly, a more uncommon lesion, to which I particularly call attention at this moment. A great number of veins, situate in the cavity of the pelvis, struck us by their state of distension ; they were filled with coagulated blood, with which a whitish liquid was mixed in the form of drops scattered to and fro, which the persons present at the autopsy compared to pus. The parietes of these veins presented no appreciable alteration. The blood contained in the primitive iliac vein, and in the vena cava inferior, presented the same appearance. Nothing similar to this was found in the right cavities of the heart, nor in the remainder of the circulatory apparatus. But in cutting into the right lung, which, when viewed externally, appeared very healthy, its parenchyma was found to be compressed in three different points by collections of pus occupying a space, which, for two of them, might contain a walnut, and for the third a hazel-nut. Around these abscesses the pulmonary parenchyma presented no appreciable alteration. In the liver another abscess was found, which, like those of the lung, existed without any lesion of the parenchyma around it. Lastly, in the brain, on the level of, and external to the optic thalami, we found another abscess, the size of a large hazel nut, which was not accompanied by any injection, nor by any softening of the surrounding cerebral substance.

I have observed other facts similar to the preceding with respect to those purulent collections found simultaneously in different organs without any trace of inflammation of the latter. It is principally after capital surgical operation, difficult labours followed by metritis, and suppurations a long time kept up, that I have seen such cases. In the particular fact now under consideration, does it not appear that the pus, primarily formed in the cavity of the pelvis, was absorbed, carried into the veins where it was found, intimately mixed in the heart with the rest of the blood, where it was no longer possible to perceive it, then deposited in the parenchyma of the lung, liver and brain. In the same manner as in experiments on animals, we see several substances introduced into the cellular tissue become mixed with the blood, and separated from it on the surface, or in the parenchyma of different organs.

PARTIAL INFLAMMATIONS OF THE SUBPERITONEAL CELLULAR TISSUE.

We shall now speak of those inflammations after the different cases of partial peritonitis which have been described, as this will in fact serve as a complement to their history. First, the symptoms of most of the affections of the subperitoneal cellular tissue are confounded with the symptoms of the diseases of the peritoneum itself; in the next place, the researches of MM. Ribes and Gendrin show that there is but little difference, with respect to texture, between the peritoneum, properly so called, and the cellular tissue subjacent to it, and that it is beneath this cellular tissue that several of the physiological or pathological phenomena take place, whose exclusive seat is ordinarily placed in the thin membrane called peritoneum.

Case 13.—*Tumour developed beneath the gastro-hepatic epiploon, which, by reason of its situation, and the symptoms produced by it, might be taken for a tumour of the liver and stomach jaundice.*

A mason, seventy-one years of age, fell on his loins in the month of July, and was obliged to keep his bed for some days ; he then resumed his ordinary occupation. In the October of the same year he began to feel slight and temporary pain in the right portion of the epigastrium. This pain became, by degrees, more severe and continued. At the same time he lost appetite ; he vomited some acid liquids ; there was constipation ; diminution of strength ; emaciation ; gradual development of a tumour in the right hypochondrium. On the 25th of December he entered the Charité, and presented the symptoms now mentioned. To the right of the epigastrium there was a tumour which extended about five fingers' breadth below the edge of the ribs ; it was globular, immoveable, and very painful on pressure. The face presented a marked straw-coloured tint ; appearance of the tongue natural ; pulse weak, not frequent ; skin dry and rough. December 28th, a very marked jaundice tint on the conjunctivæ and over the entire kin. 29th, some disturbance in the intellectual functions ; face very much altered. He sunk rapidly, and died on the 1st of January.

Post mortem. The abdominal parietes having been raised, we observed, towards the right of the epigastrium, a tumour which was about the size of two fists put together; it was circumscribed inferiorly by the small curvature of the stomach, connected superiorly with the left lobe of the liver and diaphragm, posteriorly resting on the aorta. It adhered firmly to the diaphragmatic edge and posterior surface of the stomach, and projected considerably into the interior of this organ at its pyloric portion. No morbid change in the structure of the stomach. This tumour consisted of scirrhous and encephaloid tissues in the crude state, with deposition of tuberculous matter in some points. This tumour did not seem to press on the biliary ducts. The first portion of the duodenum was healthy, but the other two portions of this intestine presented intense redness. The orifice of the ductus choledochus was marked by a red tubercle much more prominent than usual. In the first convolutions of the jejunum the traces of inflammation disappeared gradually.

This individual presented, during life, all the rational signs of an organic affection of the stomach, and it was natural to consider the tumour as connected with this organ. Yet this diagnosis was not just. The stomach was healthy, but the compression to which it was subjected by the tumour developed in its vicinity ; the obliteration of a portion of its cavity by this tumour, sufficiently account for the different symptoms of chronic gastritis which the patient presented. With respect to the origin of this tumour, I shall merely remark, that it is possible that the fall on the loins, that is to say, an irritating cause, contributed to produce it ; and with respect to its nature, I consider it as the product of hypertrophy and induration of the cellular tissue. There was no lesion of the liver or encephalon to account for the new symptoms which appeared during the termination of the patient's life, namely, the jaundice and cerebral phenomena. There was very well marked inflammation of the duodenum, with tumefaction of the mucous membrane around the orifice of the duct for the excretion of bile.

CASE 14.—*Abscess in the psoas muscle, with the destruction of the periosteum of the vertebræ in contact with the pus—Ascites.*

A painter, forty-five years of age, had several times undergone treatment for lead colic in the Charité. He came to the hospital again complaining of abdominal pain, which he referred as usual to his handling preparations of lead ; but we were soon convinced that they were referrible to another cause. Here, in fact, was what we ascertained : four months previous to his entering the hospital this person began to feel in the lumbar region, particularly in the left, a deep-seated pain, which was not increased by pressure, but which was increased by walking and by different movements of the trunk. During the first three months he continued his usual occupation, though with considerable pain ; but after this time the lumbar pain extended to the abdomen ; walking was now impossible, and soon after the abdomen began to swell. When we saw him he evidently had ascites ; the two lower extremities also were infiltrated as well as the scrotum, face pale and emaciated, as well as the upper extremities; pulse frequent, skin hot. The left thigh immovable and semiflexed; when he attempted to move it the pains in the abdomen and loins, on the left side, became very intense; he could raise it on the contrary without increasing the pain. He sweated profusely every night; had had a cough for some months, and expectorated greenish and opaque sputa. He remained three months in the hospital without any improvement; then a large eschar formed on the sacrum, which nothing could arrest; one of the thighs was attacked with erysipelas; the patient fell into an adynamic state, and soon died. During the last period of his life, his expectoration resembled that of consumptive patients; in the midst of a fluid like gum-water, greyish flocculi were suspended.

Post mortem. A considerable quantity of limpid serum in the peritoneal cavity. There was nothing, anatomically speaking, to indicate that this ascites had succeeded peritonitis. Beneath and outside the layer of peritoneum, which is reflected from the kidneys over the left side of the vertebral column to form one of the folds of the mesentery, there was an enormous collection of pus. It occupied the place of the psoas muscle, of which a few scattered fibres only were found, which terminated inferiorly in its tendon, which still continued intact. The pus was in immediate contact with the body of the vertebræ, which were stripped of their periosteum and rough. Some pus was also found beneath the crural arch; a great quantity of it between the muscles of the inner part of the thigh. The mucous membrane of the stomach was of a slate colour. The rest of the digestive tube was slightly injected in some points. The bronchi were red, the pulmonary parenchyma was engorged, but contained no tubercles. The gangrenous ulceration of the skin of the sacrum had exposed a part of this bone.

This case presents an instance of a disease some years ago called psoitis. It appears to me at least doubtful that the disease commenced by an affection of the muscle itself. We scarcely ever see mere muscular rheumatism terminate in suppuration; that which occurred in this case appears rather to have had its origin in inflammation of the sub-peritoneal and intermuscular cellular tissue of this part, which had gradually set in. It was for a long time announced by no other symptoms than lumbar pain. The destruction of the psoas muscle, in the middle of which the pus was found, was not consecutive on the inflammation of the cellular tissue, its fibres disappeared by little and little, as the periosteum of the bodies of the vertebræ did. The immobility of the thigh of the affected side, the extreme pain produced by every attempt to move it, have been noticed as symptoms of psoitis; these phenomena were very well marked in this patient. The ascites, and infiltration of the scrotum and lower extremities, were consecutive on the sub-peritoneal abscess. Did they depend on it? At least no other cause was found to which they could be attributed. I have stated elsewhere what importance should be attached to the characters of the sputa in order to diagnose the existence of pulmonary tubercles. Here we observed for several days those flocculent sputa, which some persons consider characteristic of phthisis, and yet there was nothing here but simple chronic bronchitis. This had been in existence for a considerable time, and yet no tubercle was formed in the lung: there was not then any disposition to tuberculous secretion; which was strictly in accordance with the nature of the pus formed under the lumbar peritoneum; it was creamy, homogeneous, and not separated into lumps, more or less serous, as it is generally found in persons disposed to tubercles; so true is it that the local action which produces tubercle is connected with a general disposition of the solids and fluids, which manifests itself by remarkable modifications in the process of nutrition and secretion.